

FIG. 1

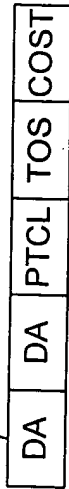


FIG. 2

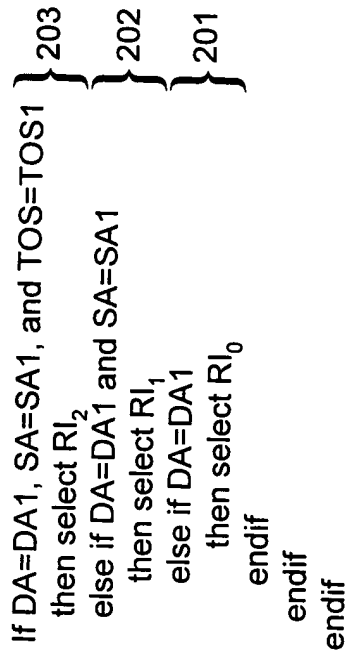
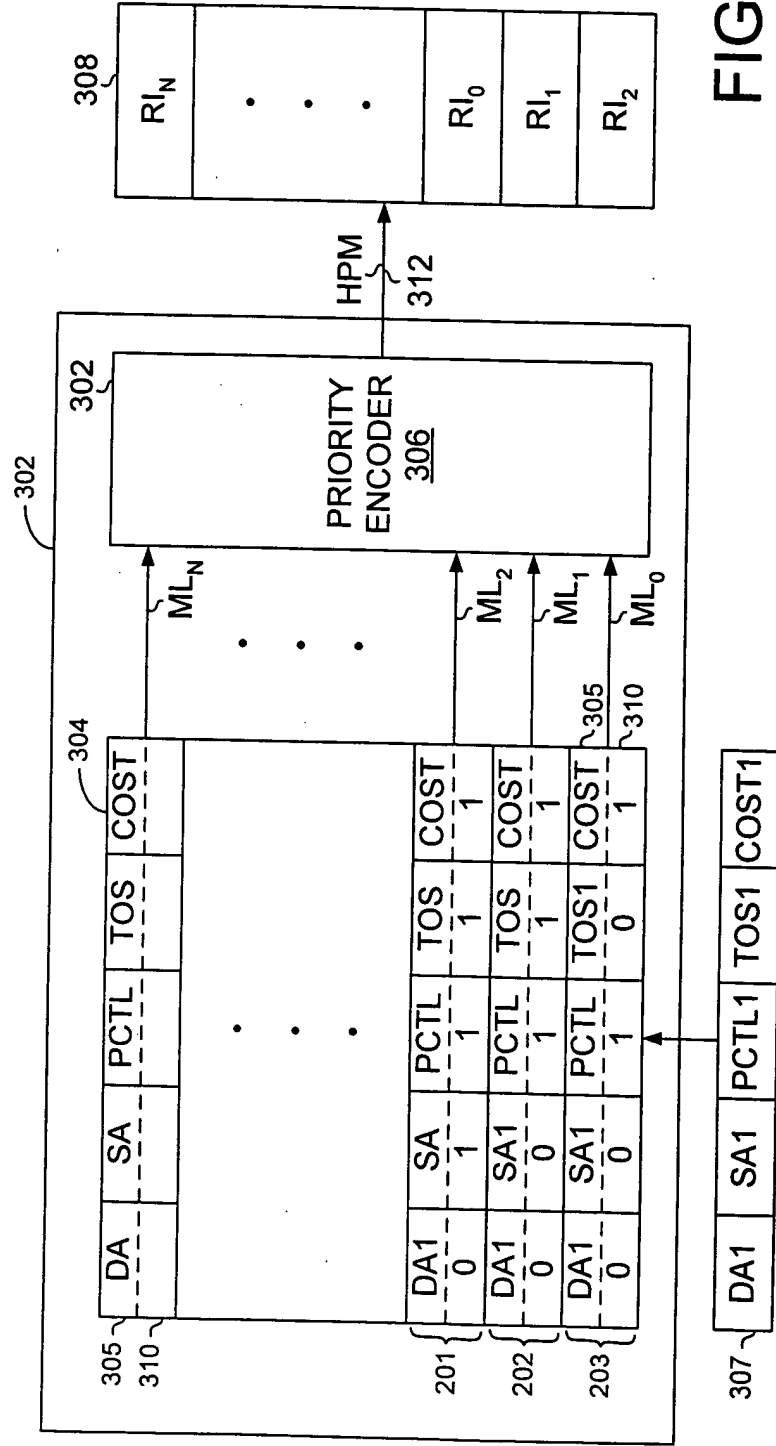


FIG. 3



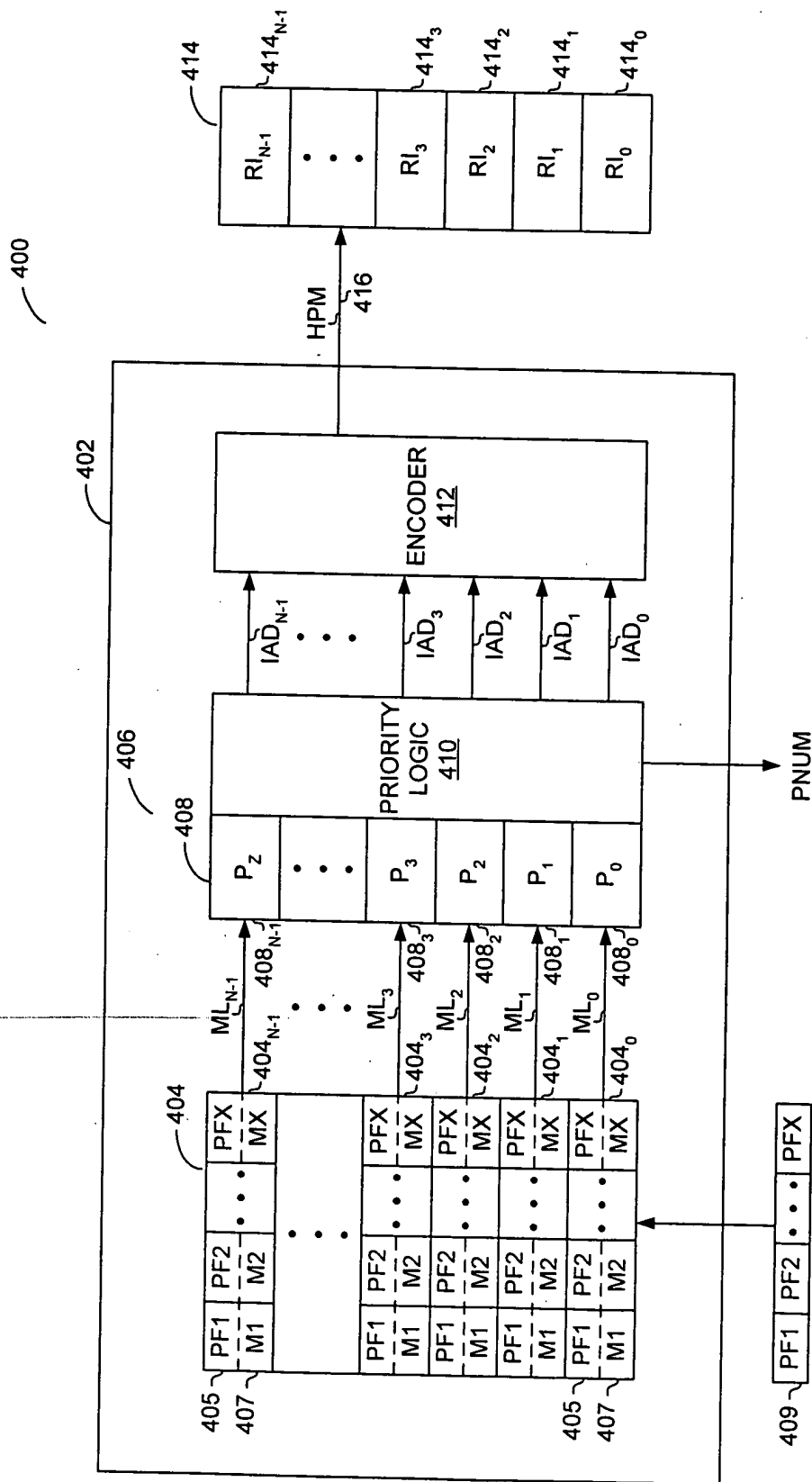
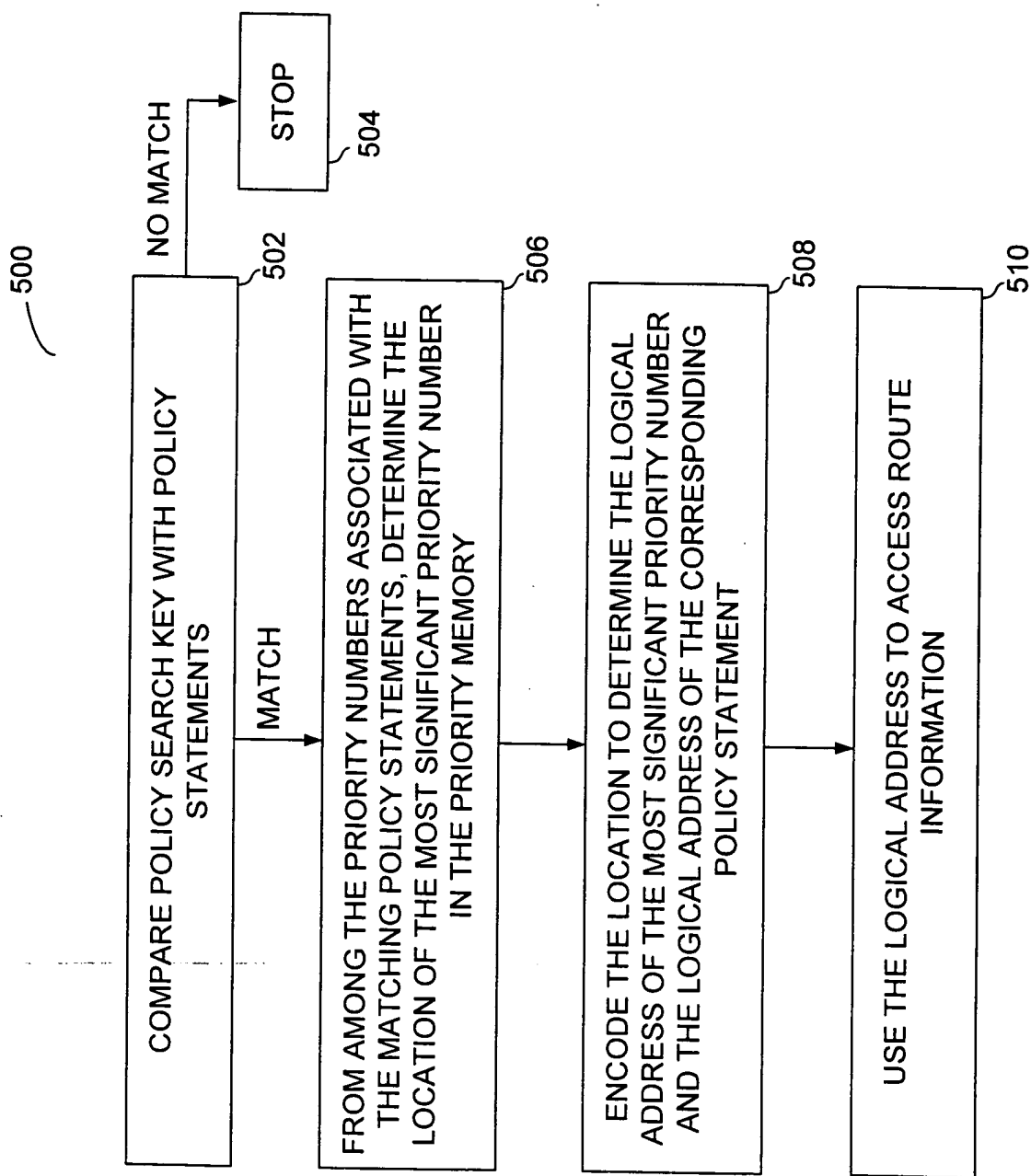


FIG. 4



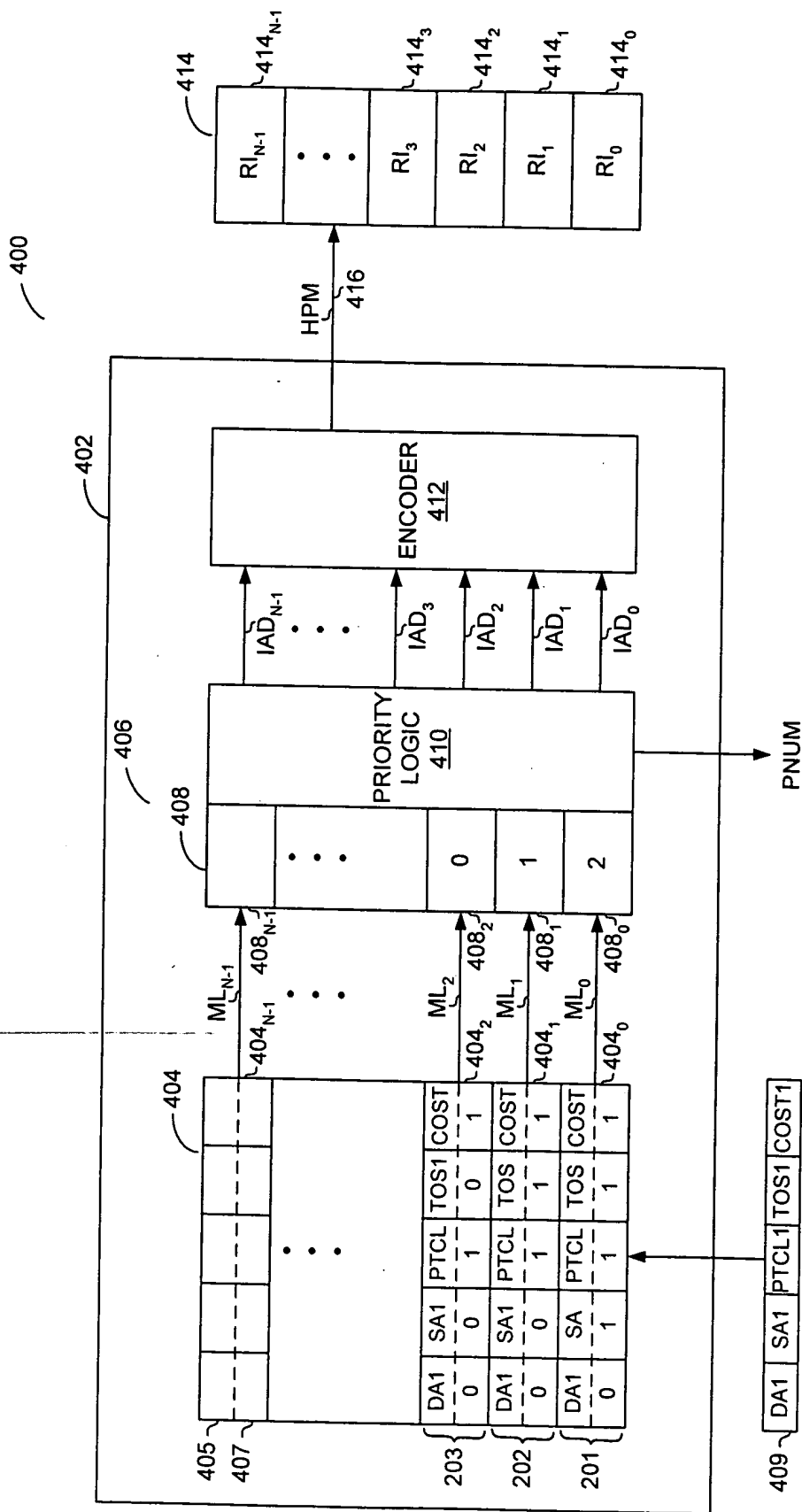
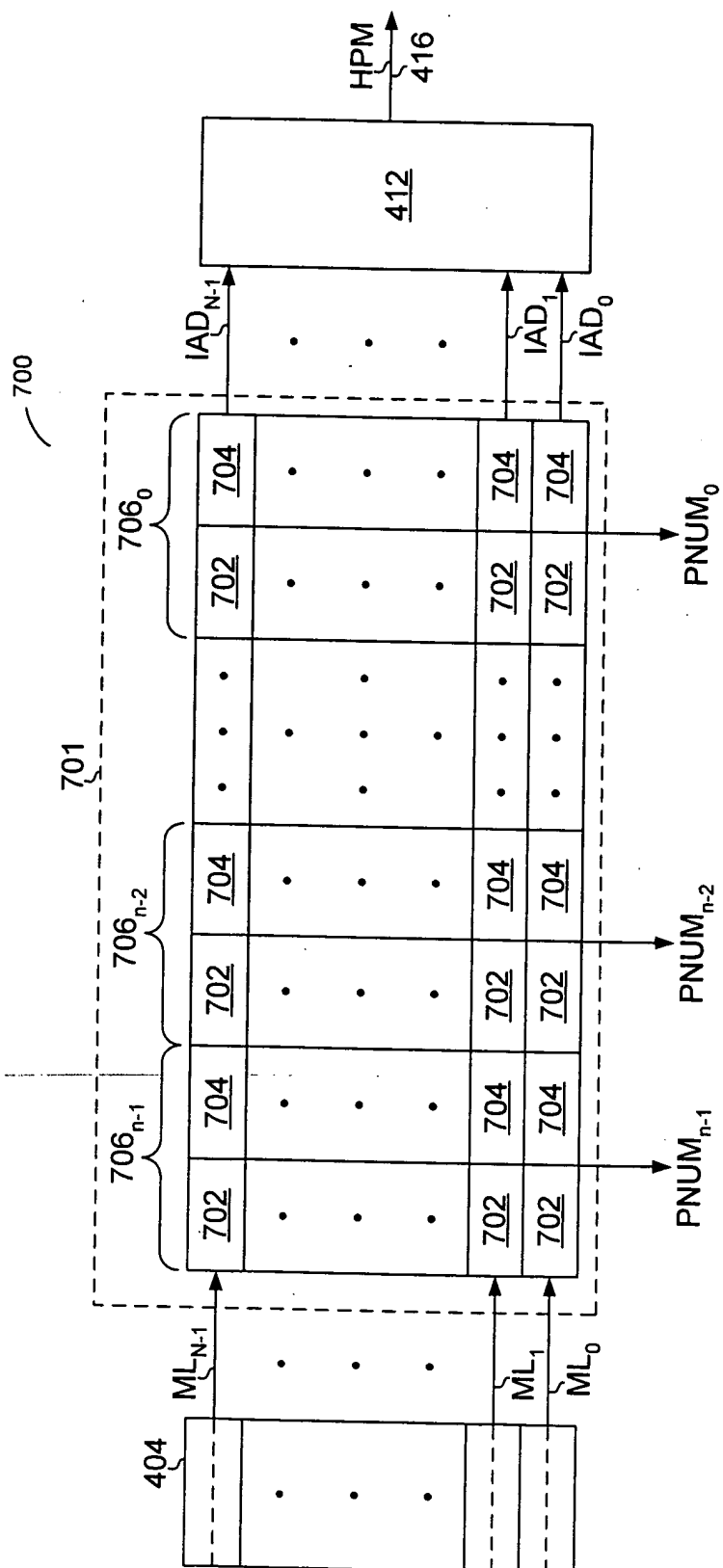
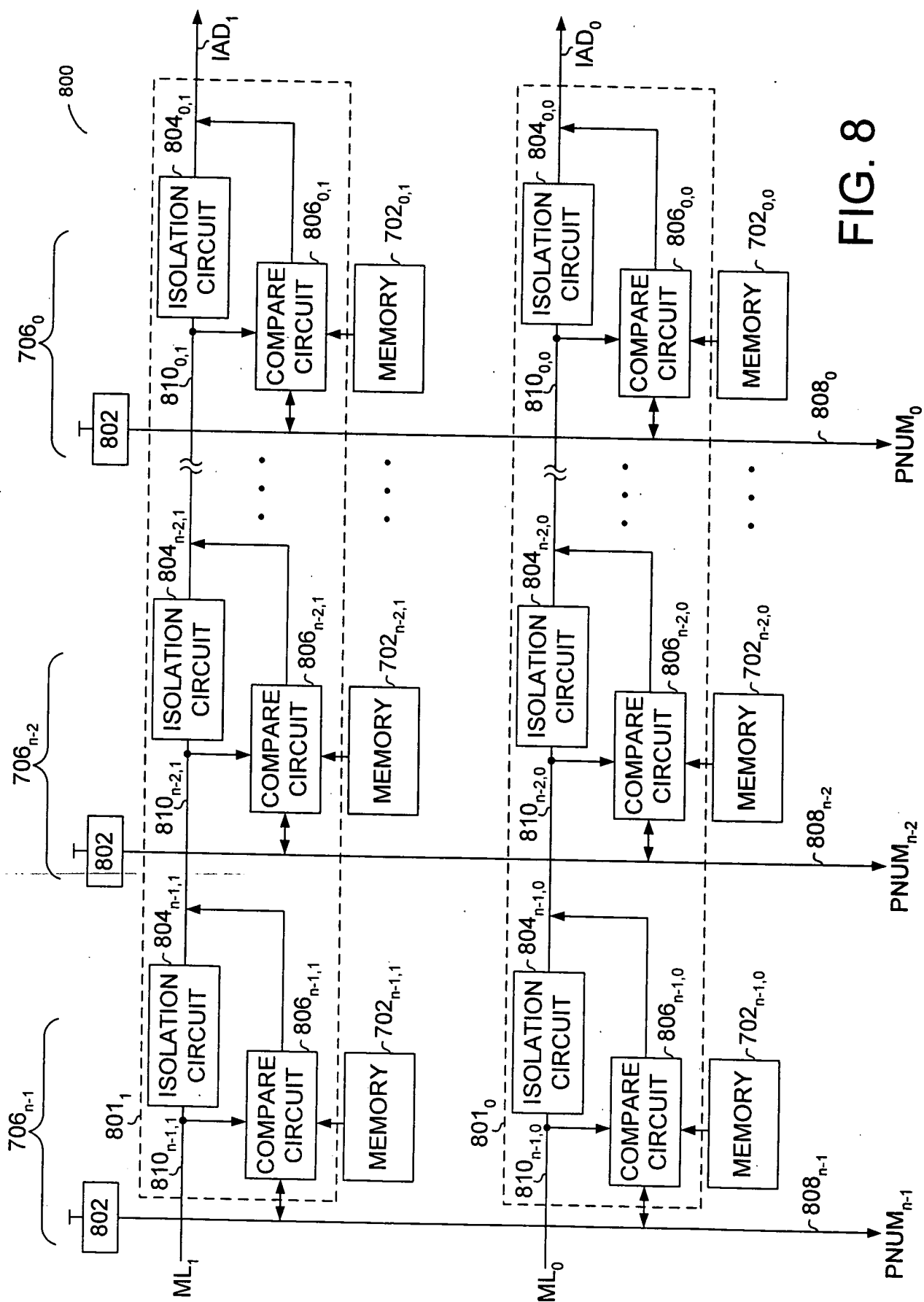
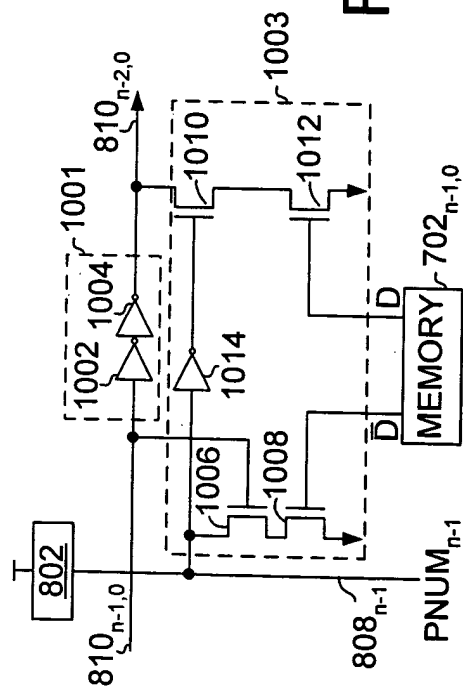
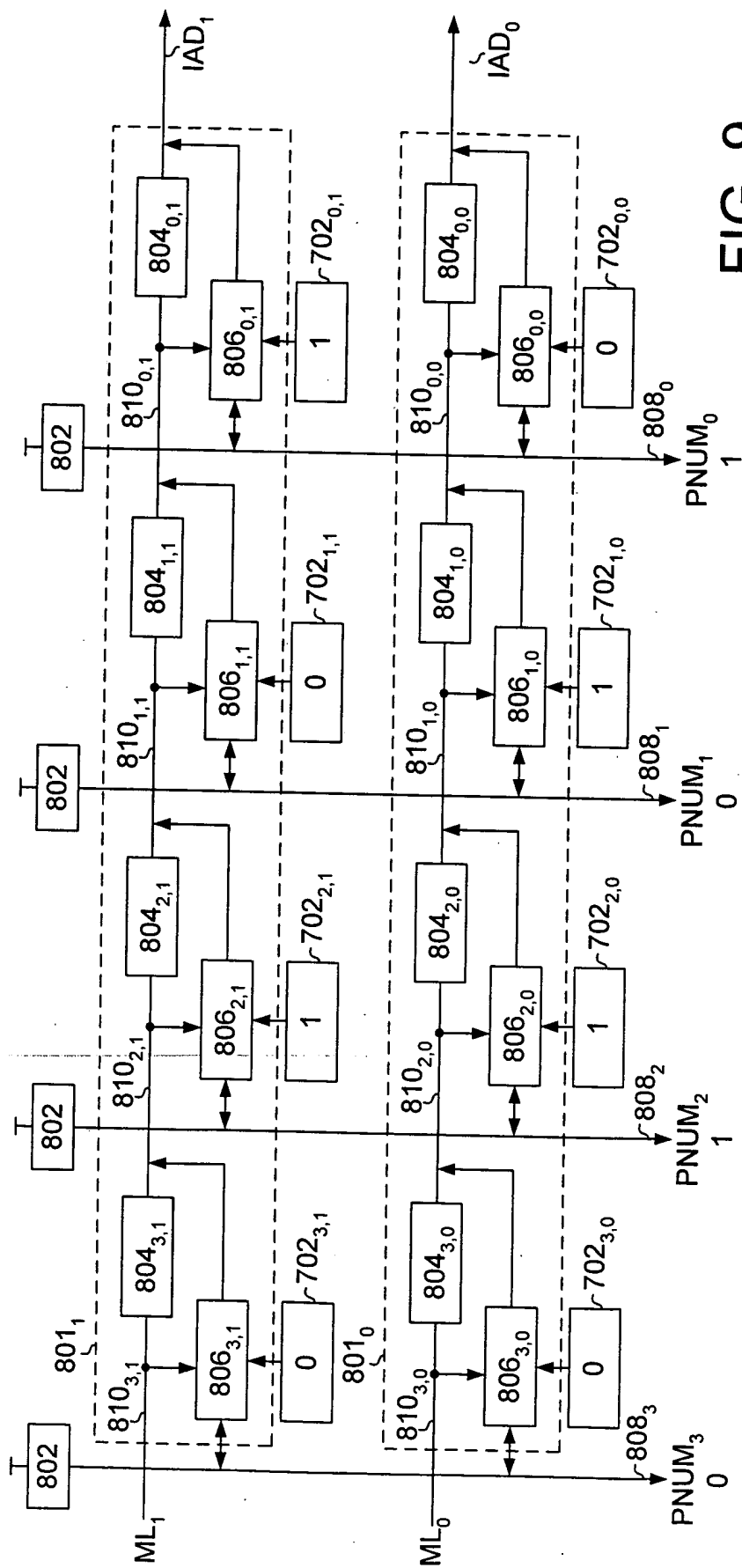


FIG. 6







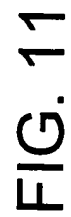


FIG. 11

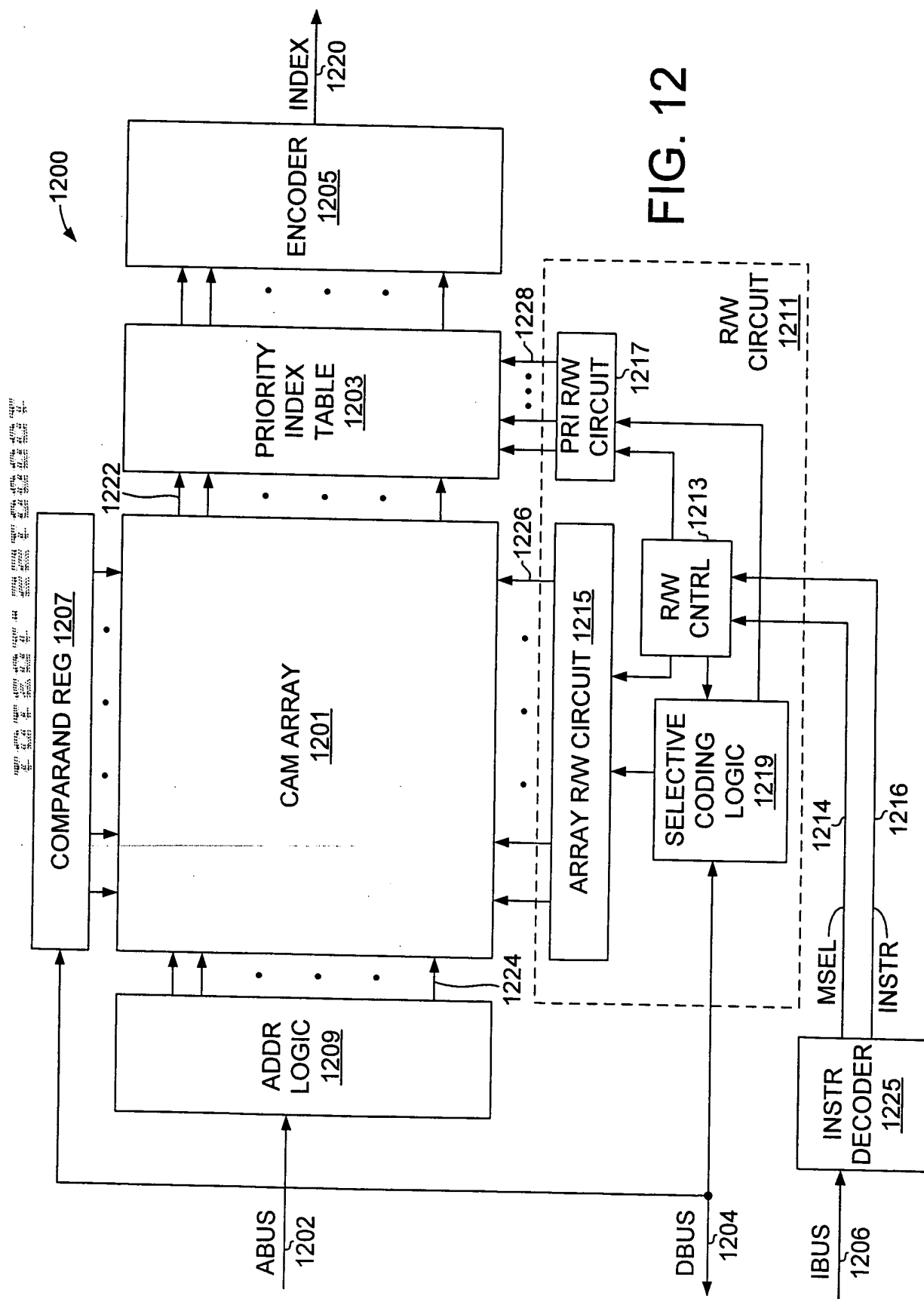


FIG. 12

FIG. 13 is a block diagram of a circuit 1300. The circuit 1300 includes a DBUS 1204, a MSEL 1214, a PRI/PREF REG 1302, a DECODER 1301, a 1303, and a 1307. The DBUS 1204 is connected to the PRI/PREF REG 1302. The MSEL 1214 is connected to the PRI/PREF REG 1302. The PRI/PREF REG 1302 is connected to the DECODER 1301. The DECODER 1301 is connected to the 1303. The 1303 is connected to the 1307. The 1307 is connected to the TO PRIORITY RW CIRCUIT. The 1303 is also connected to the TO ARRAY RW CIRCUIT.

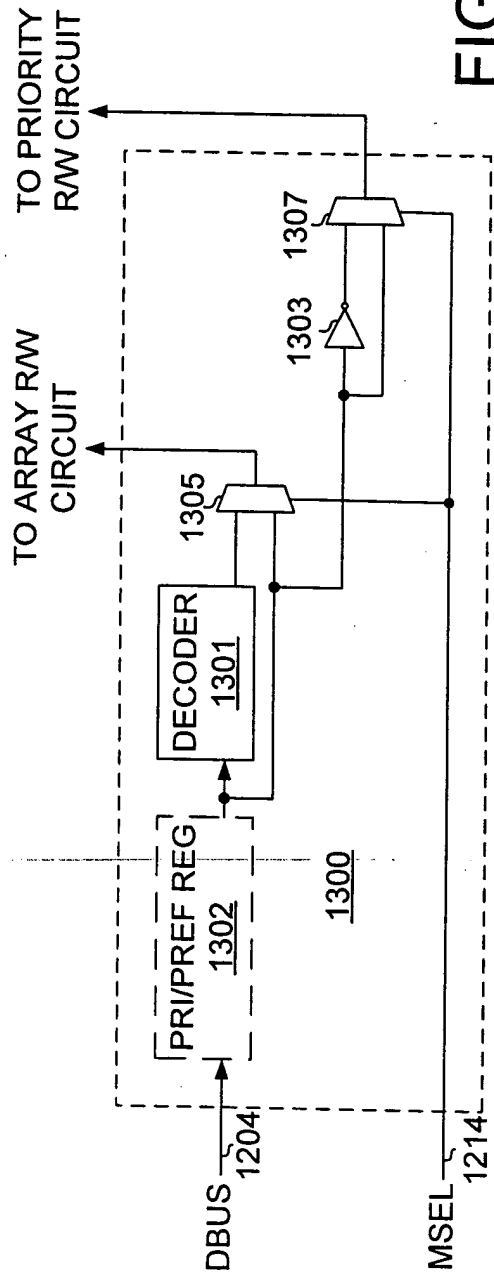


FIG. 13

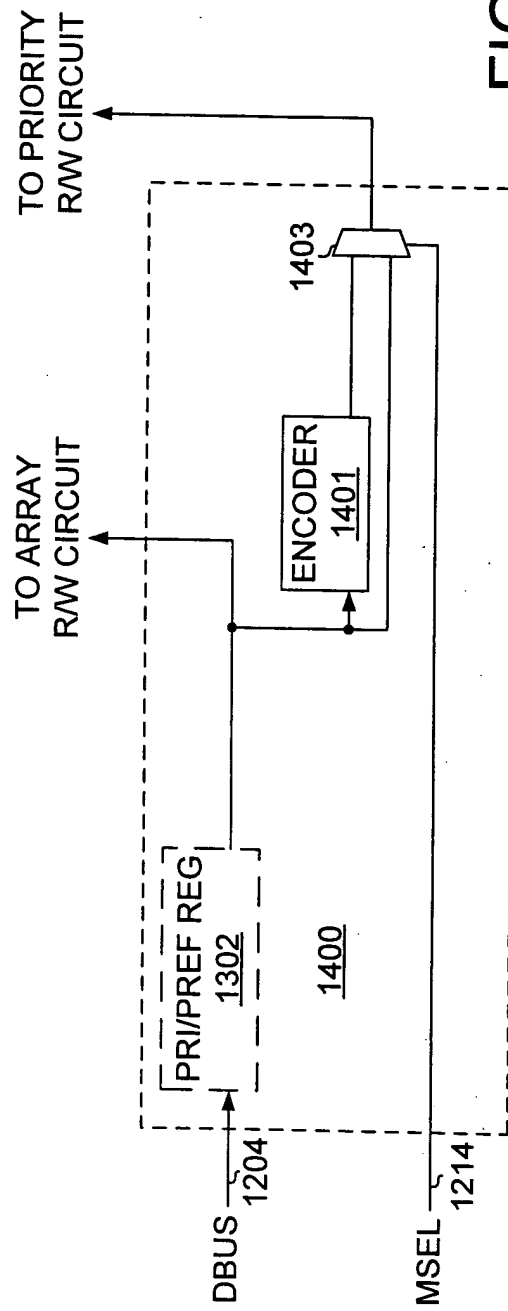


FIG. 14

FIG. 15

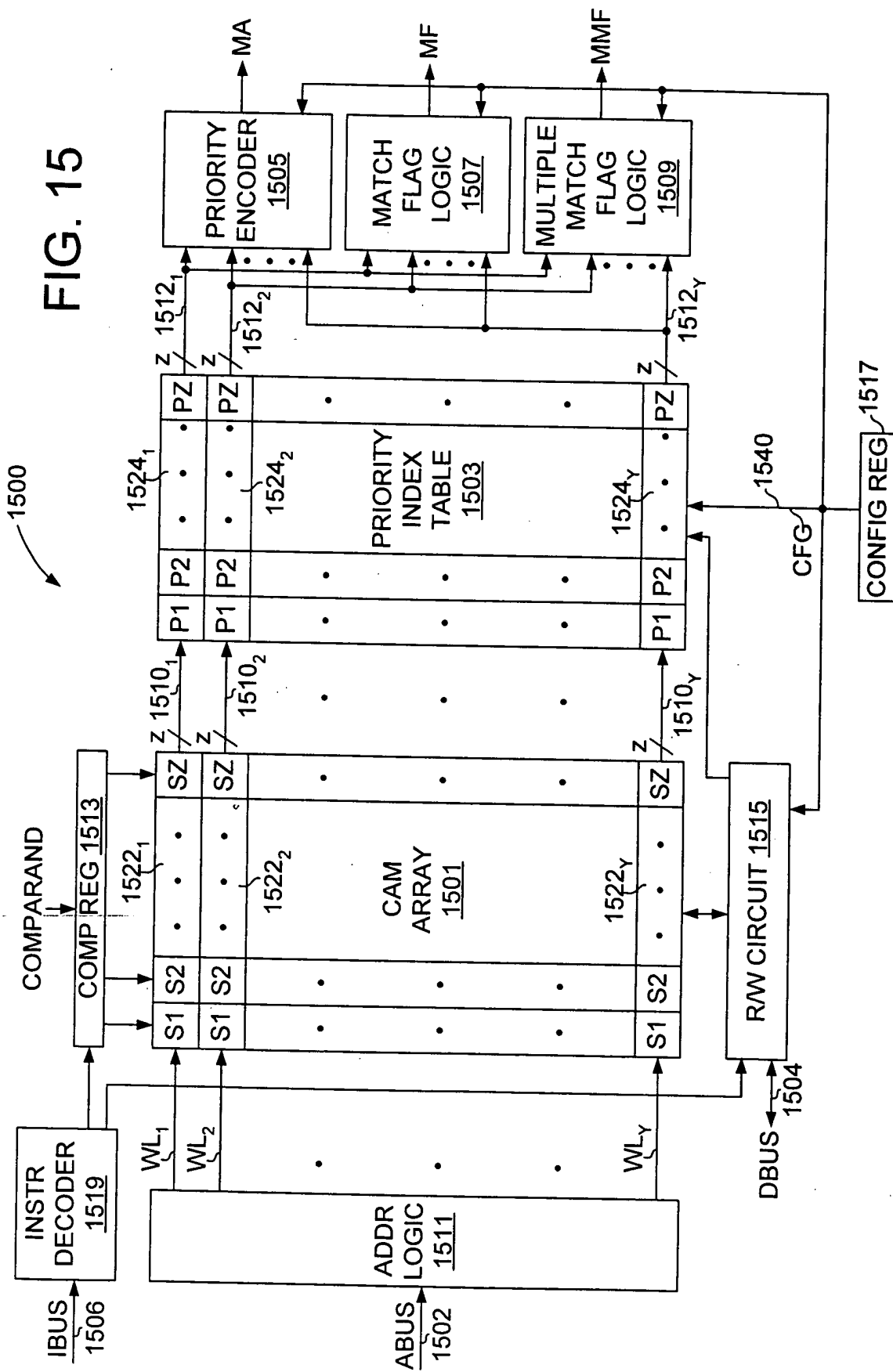




FIG. 16

FIG. 17 is a schematic diagram of a circuit 1700. The circuit 1700 includes a SA DECODE LOGIC 1701, a 2:4 DECODE 1707, and a set of AND gates 1705. The SA DECODE LOGIC 1701 receives inputs A0, A1, and A2, and outputs DA1 through DA8. The 2:4 DECODE 1707 receives inputs LWEN1 and LWEN0, and outputs CS1 through CS4. The AND gates 1705 receive inputs DA1 through DA8 and CS1 through CS4, and outputs PWE1 through PWE8 and AWE1 through AWE8. The circuit 1700 also includes a multiplexer 1713, an OR gate 1711, and a set of signals CFM, PW, and AW. The multiplexer 1713 selects between LWEN1 and LWEN0 based on input 1540. The OR gate 1711 combines signals SZ128 and SZ256 to produce output 1703. The signals CFM, PW, and AW are connected to various components of the circuit 1700.

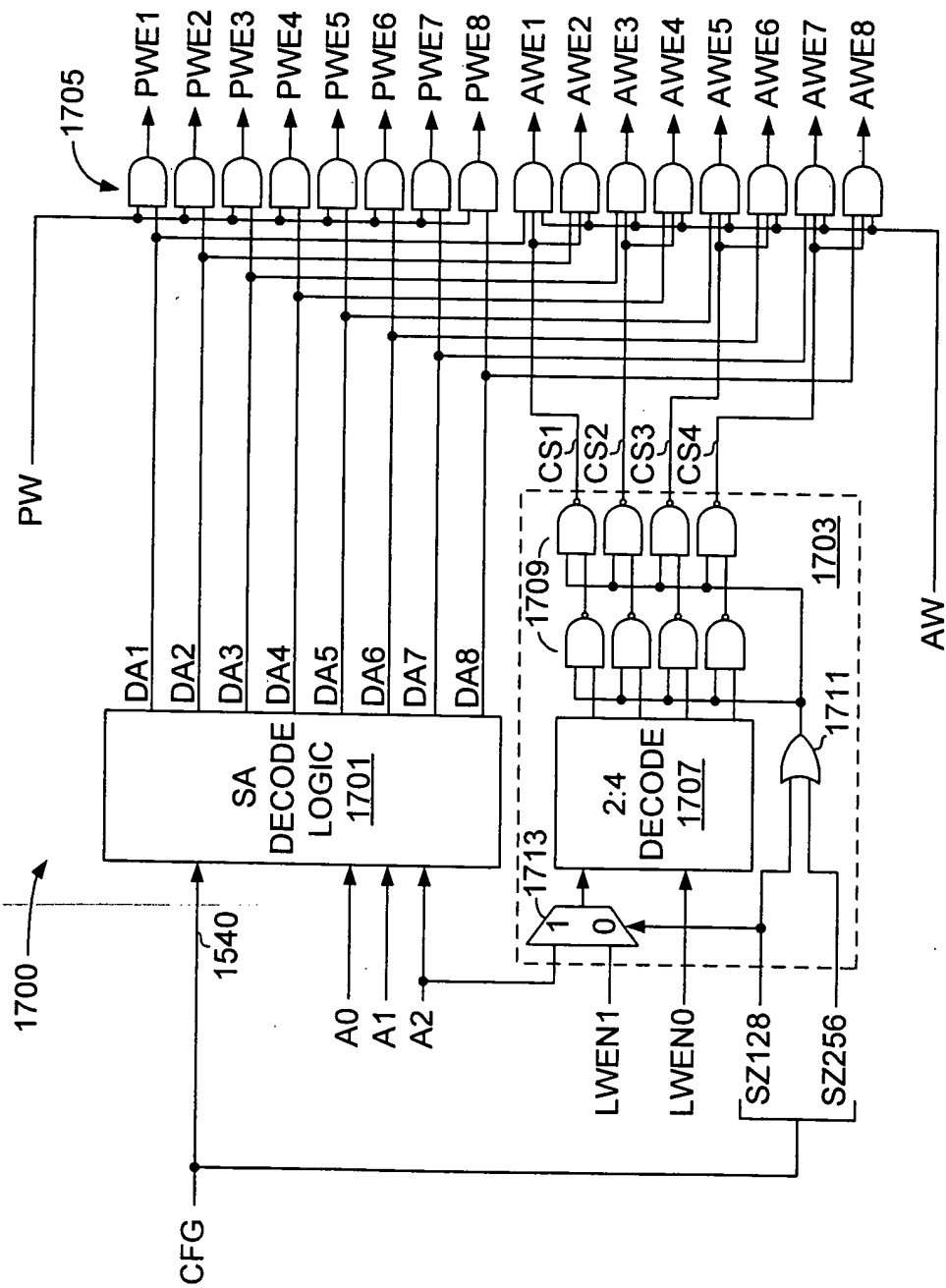


FIG. 17

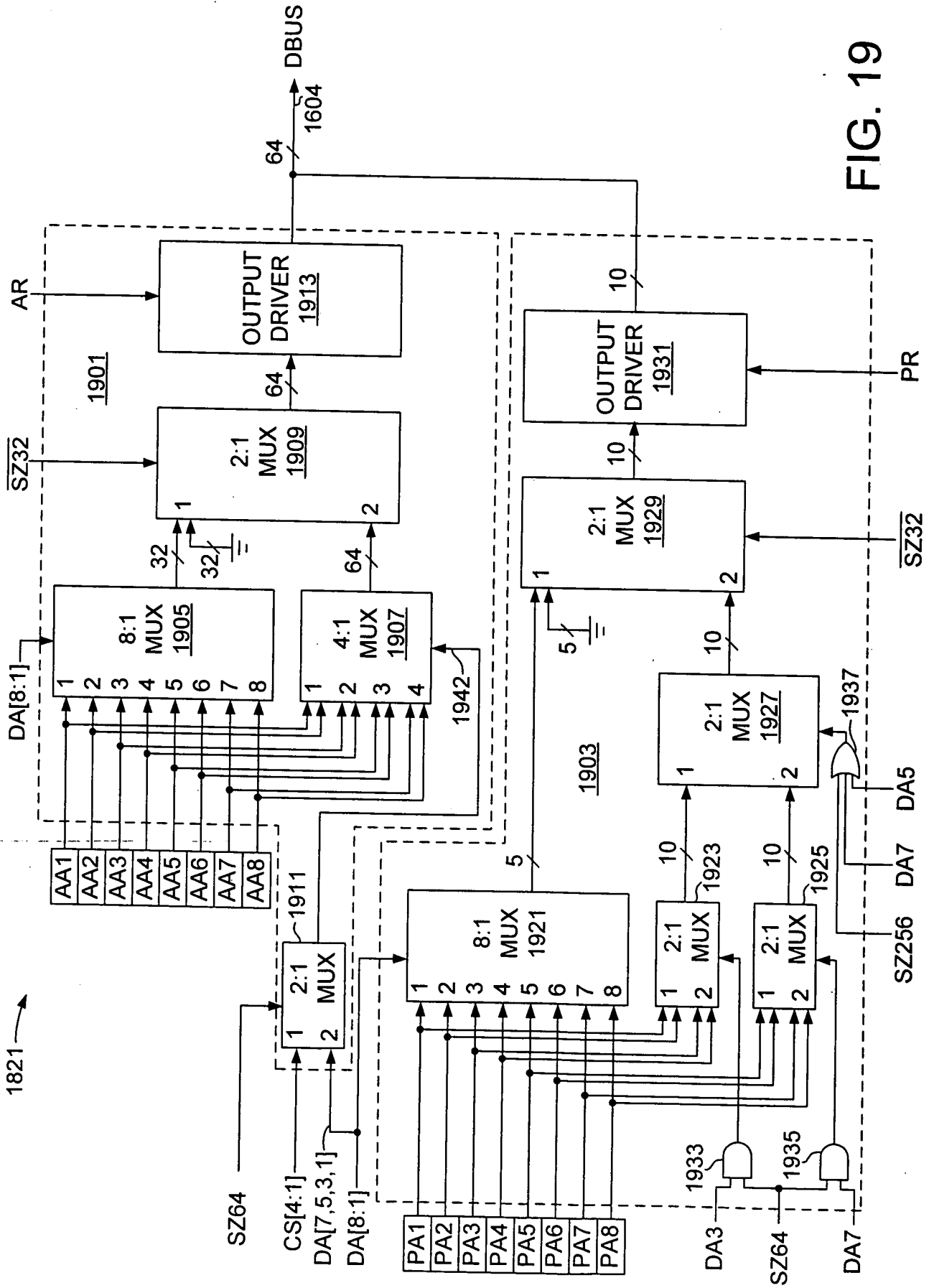
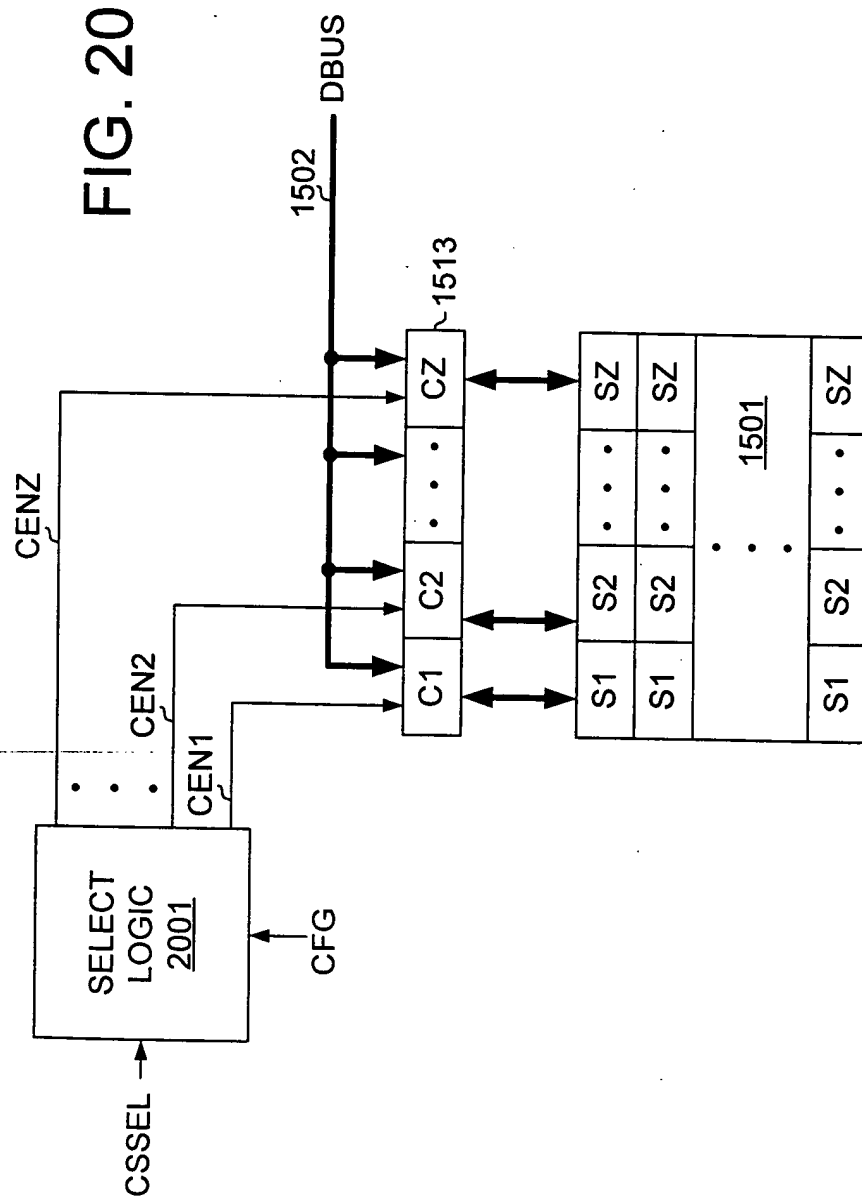
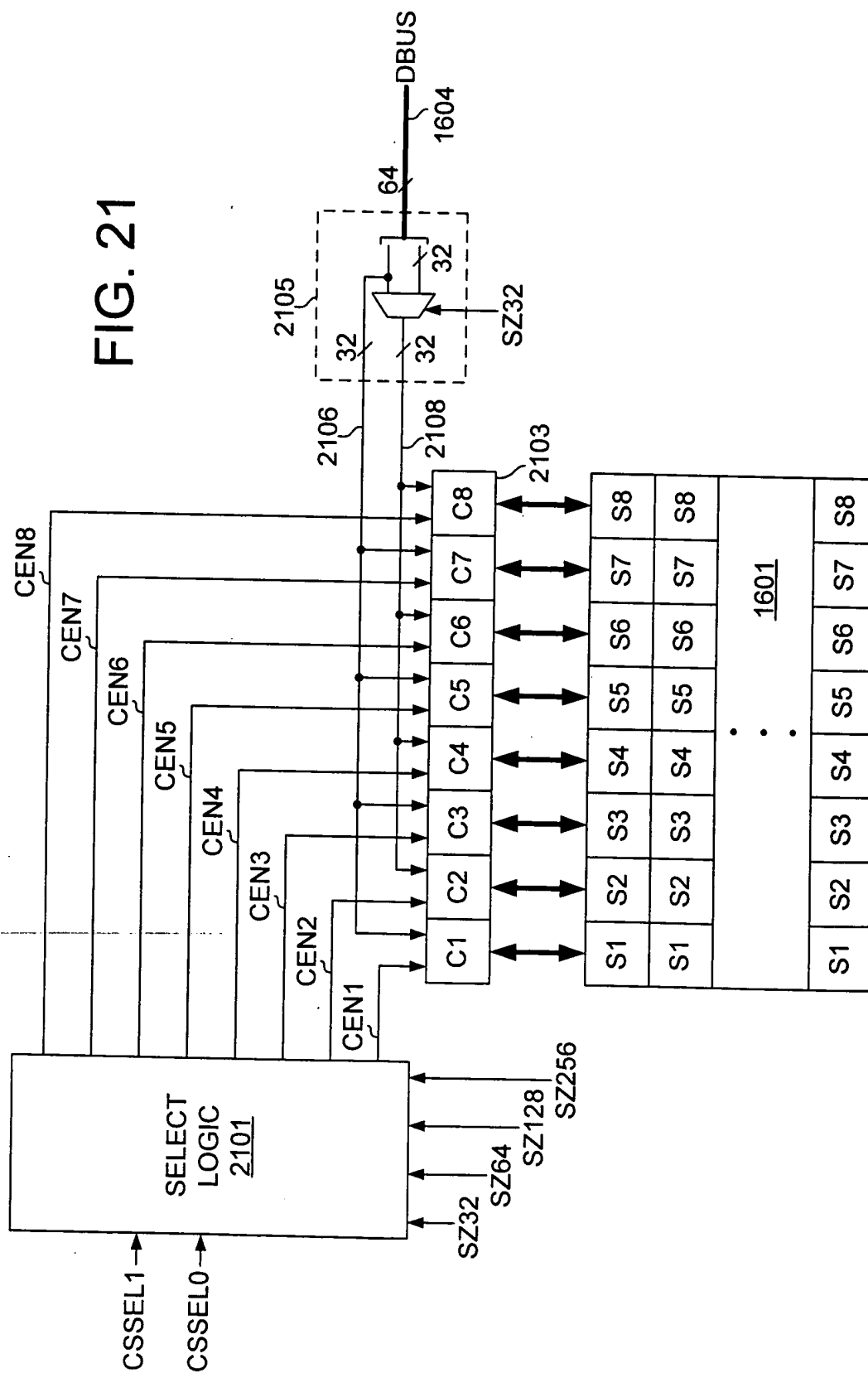


FIG. 19

FIG. 20





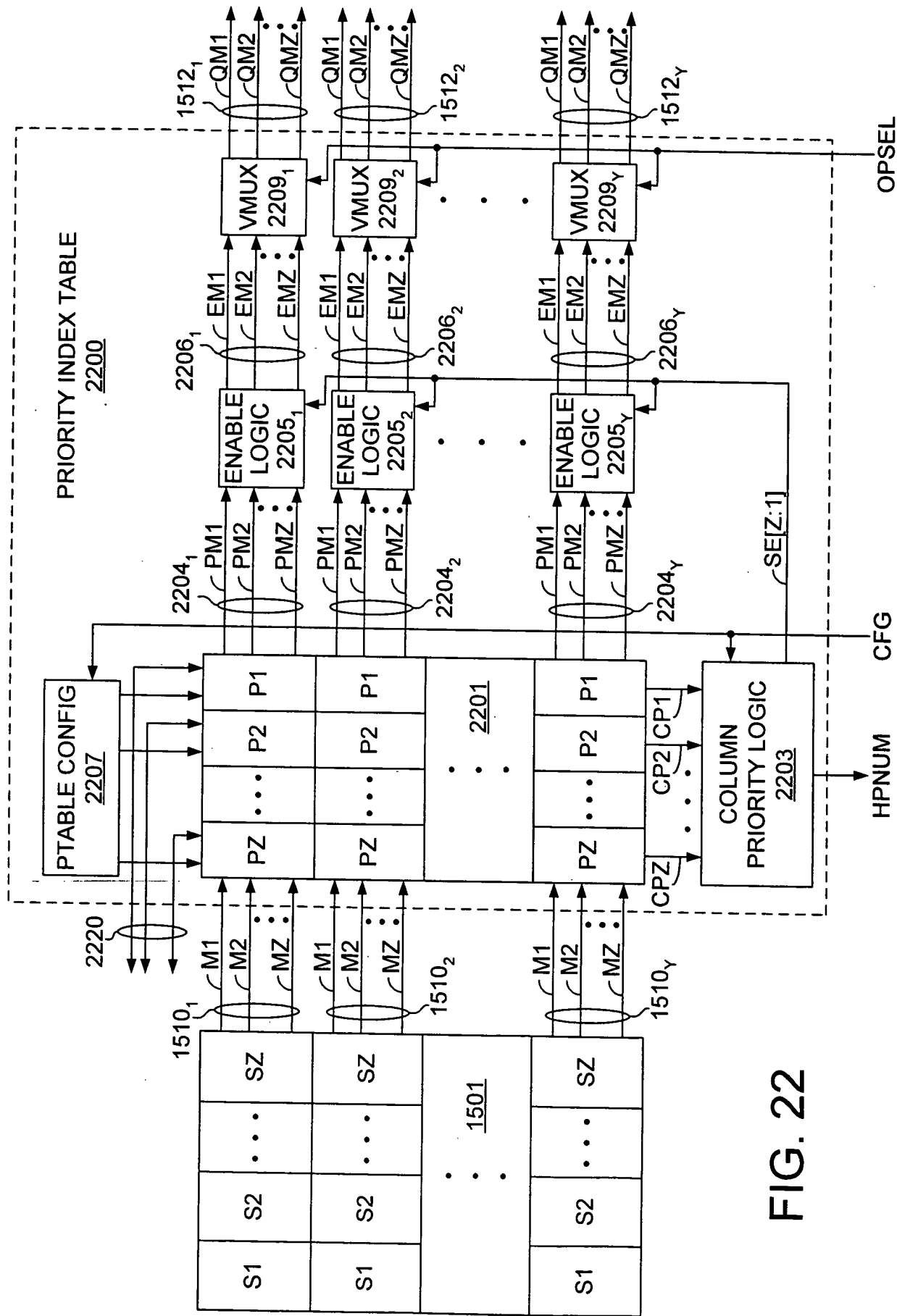


FIG. 22

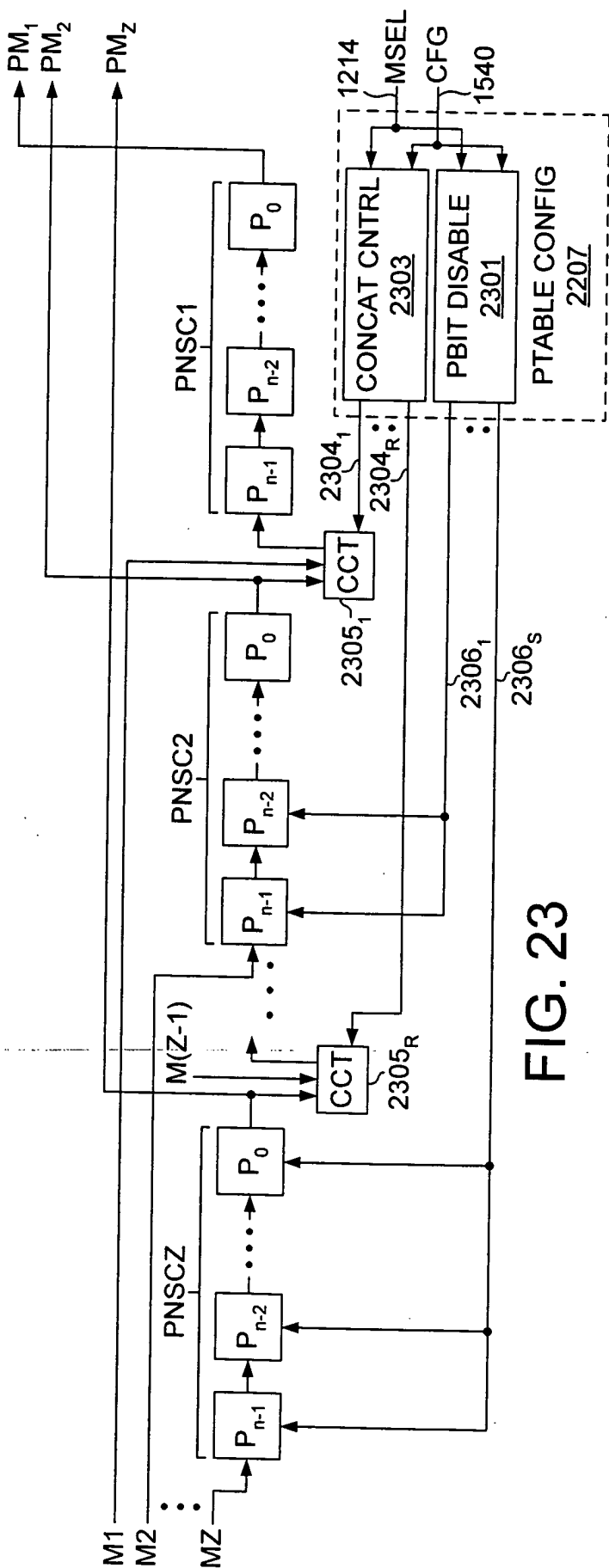


FIG. 23

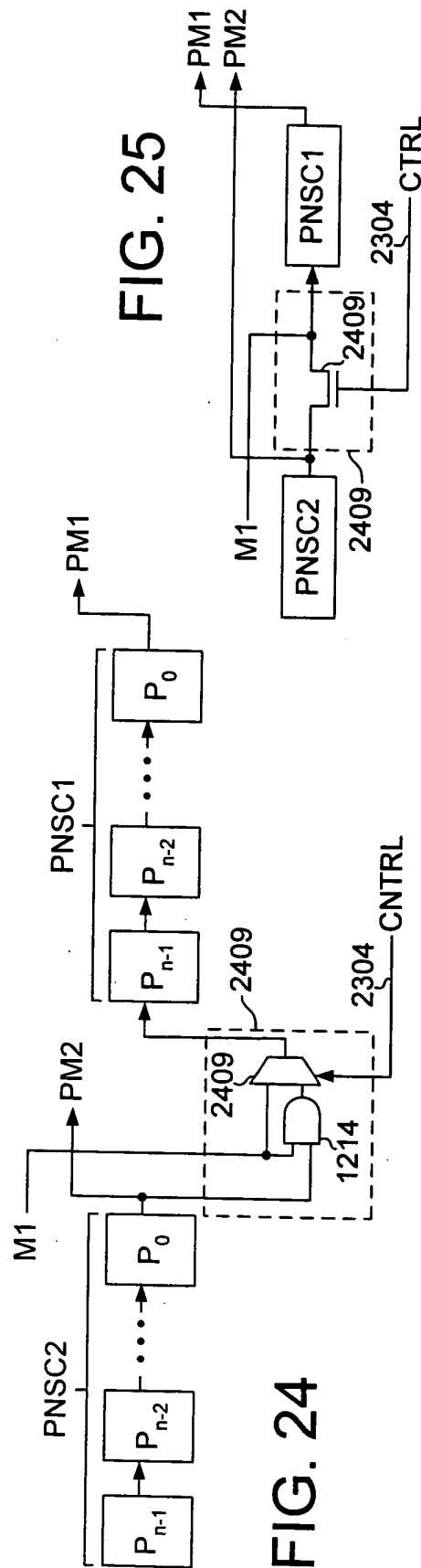


FIG. 24

FIG. 25

FIG. 26

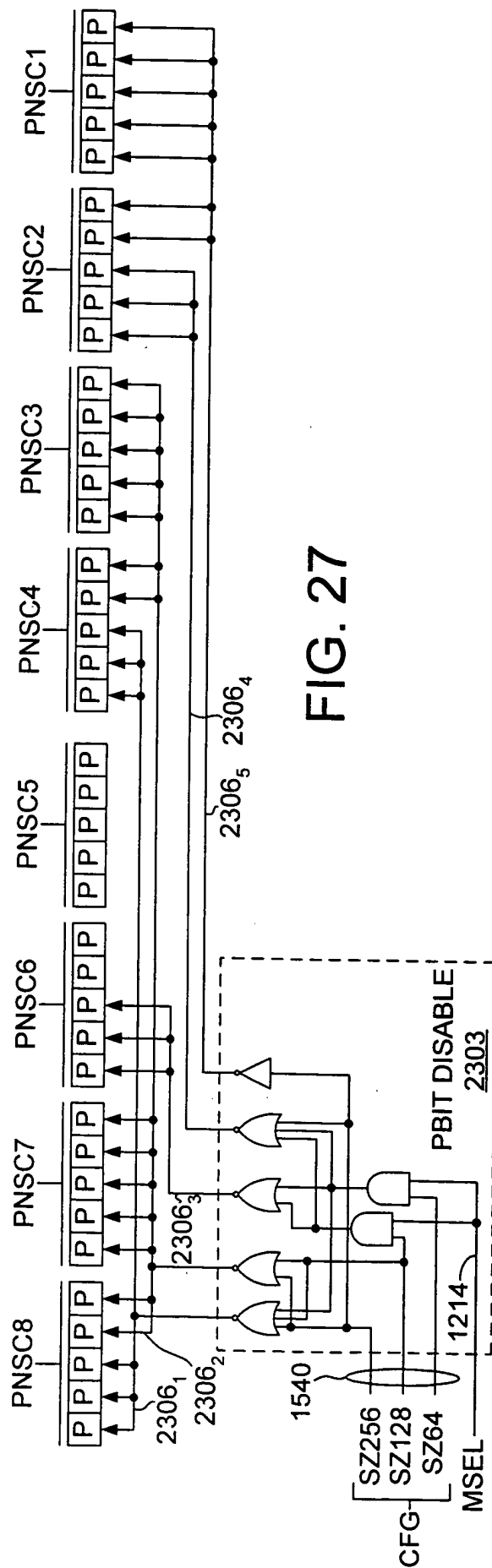


FIG. 27

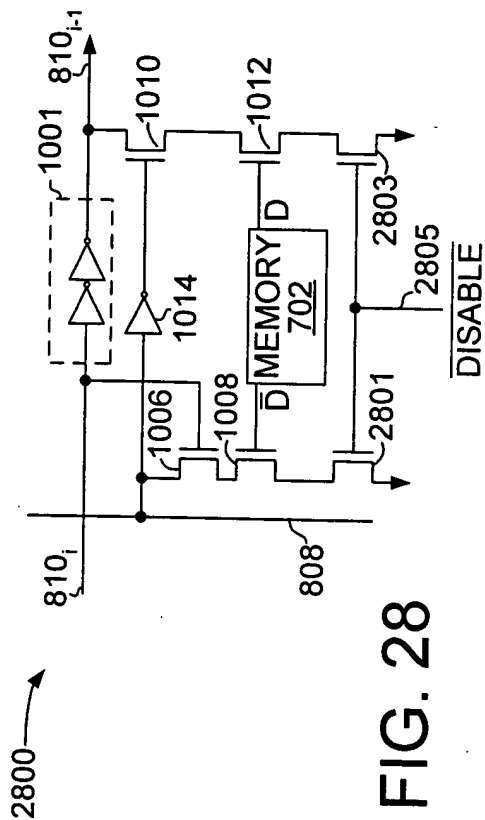


FIG. 28

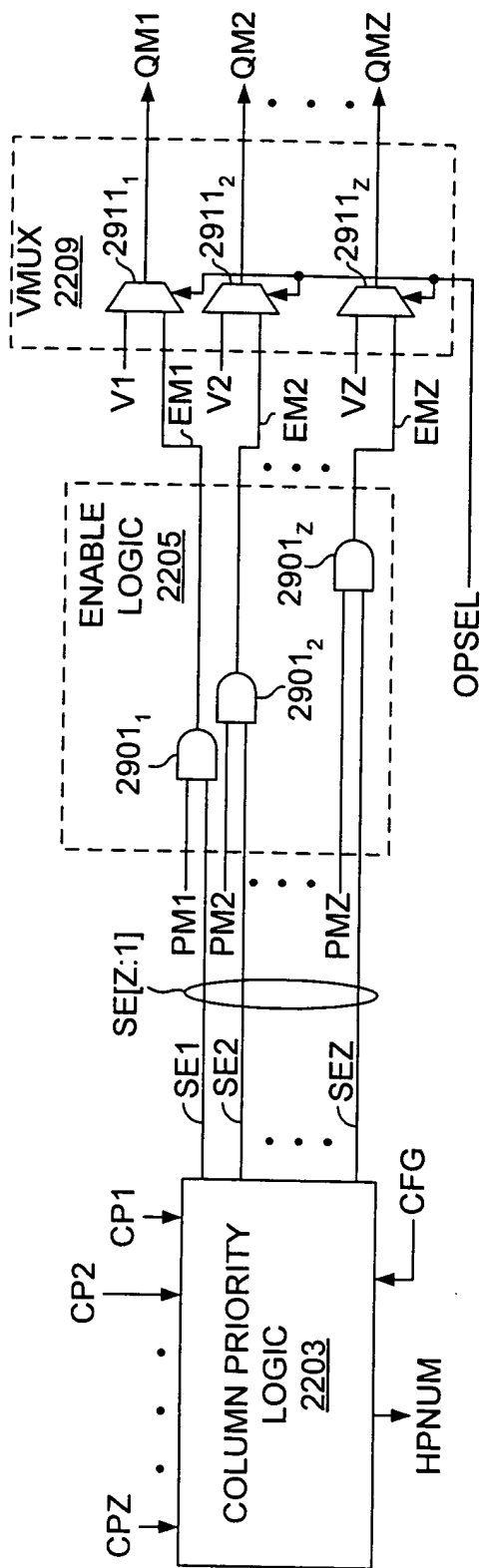


FIG. 29

FIG. 30 is a block diagram of a system architecture. The system includes a central processing unit (CPU) 3003, a memory unit 3005, and a display unit 3007. The CPU 3003 is connected to the memory unit 3005 and the display unit 3007. The memory unit 3005 is connected to the display unit 3007. The display unit 3007 is connected to the CPU 3003. The system also includes a keyboard 3001 and a mouse 3002. The keyboard 3001 and mouse 3002 are connected to the CPU 3003. The CPU 3003 is connected to the keyboard 3001 and the mouse 3002. The system is configured to process data and display the results on the display unit 3007.

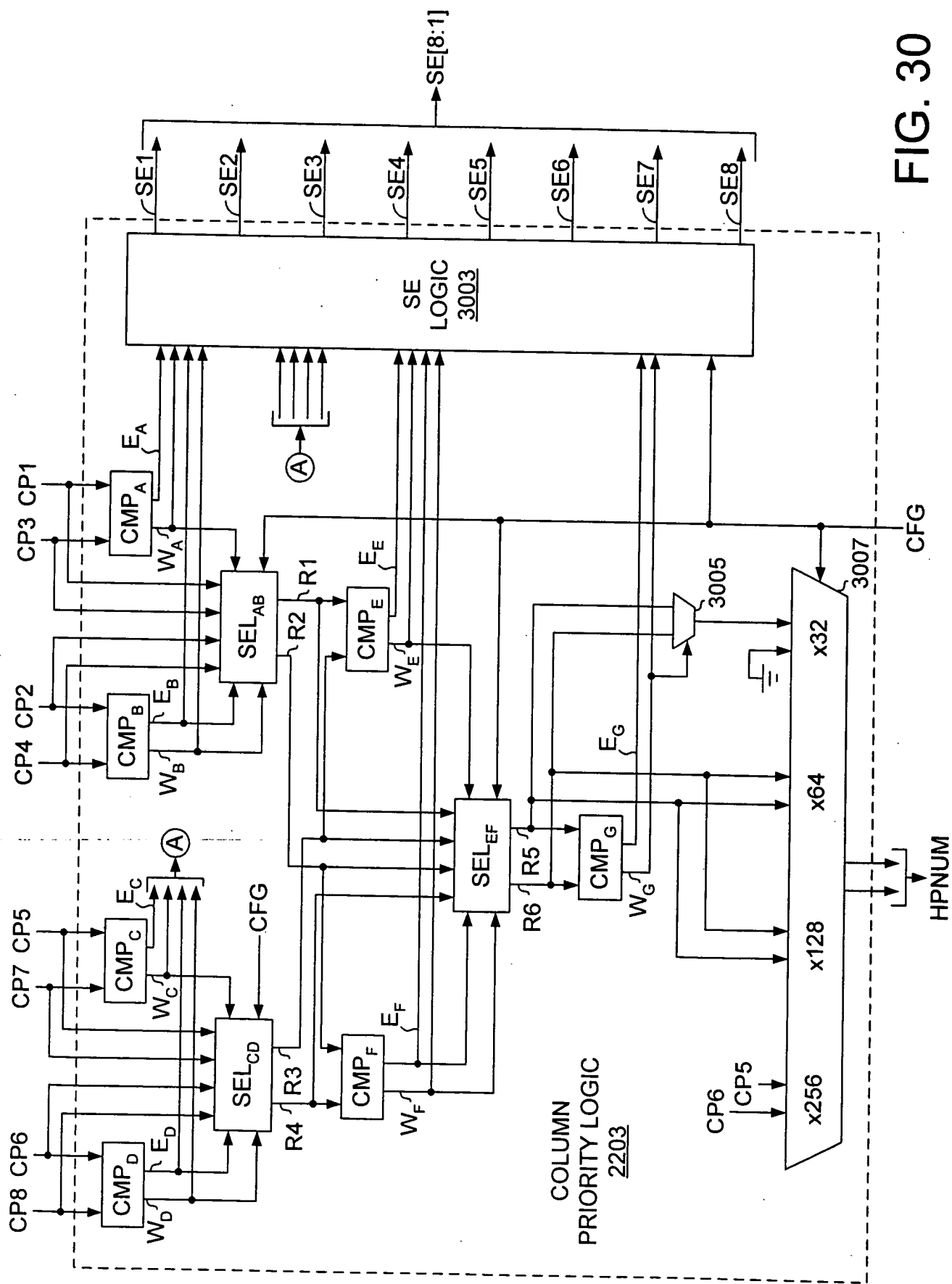


FIG. 30

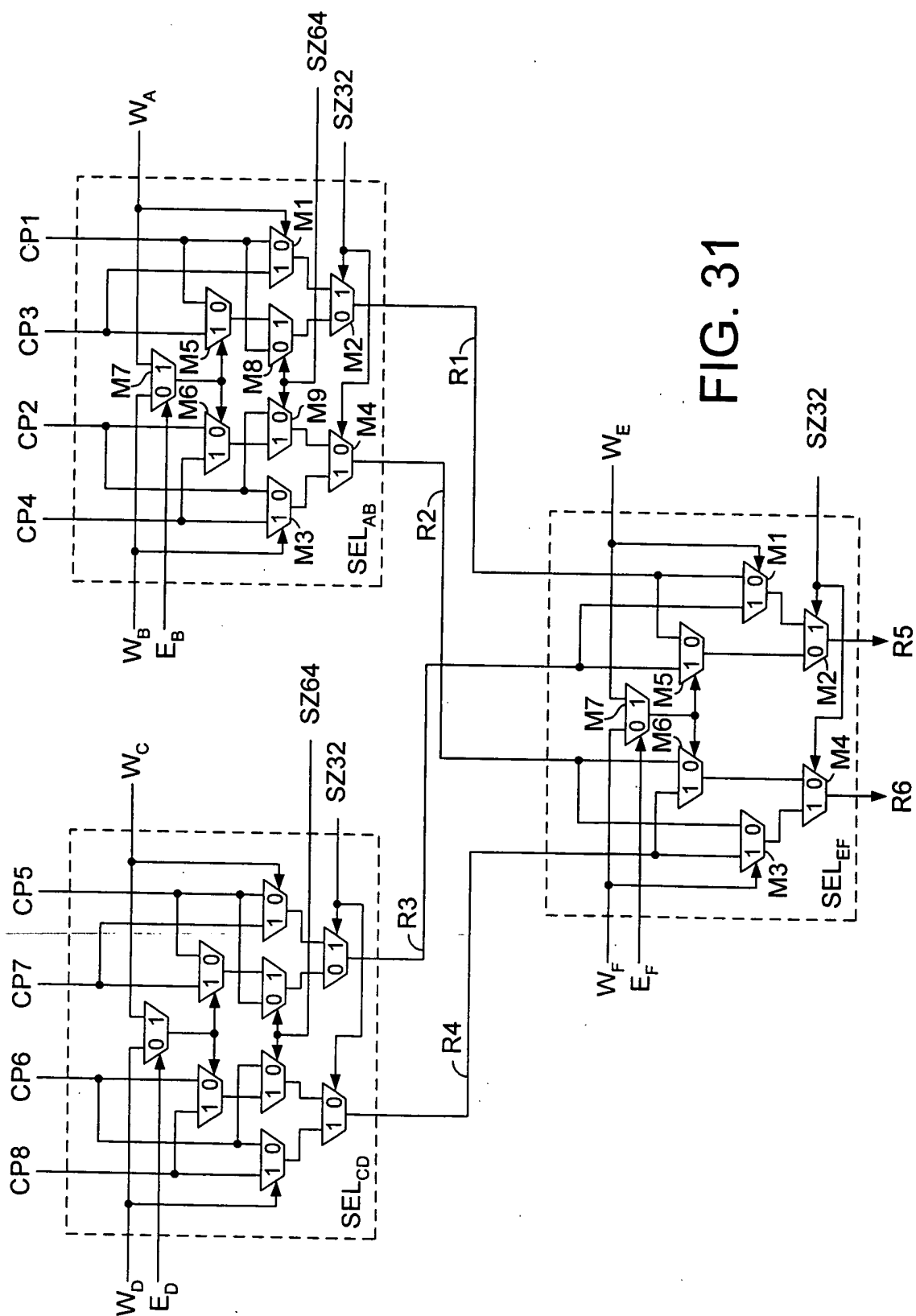


FIG. 32

x64	x32	E _B	W _B	W _A	R2	R1
X	1	X	0	0	HP2	HP1
X	1	X	0	1	HP2	HP3
X	1	X	1	0	HP4	HP1
X	1	X	1	1	HP4	HP3
1	0	0	0	X	HP2	HP1
1	0	0	1	X	HP4	HP3
1	0	1	X	0	HP2	HP1
1	0	1	X	1	HP4	HP3
0	0	X	X	X	HP2	HP1

FIG. 33

x64	x32	E _D	W _D	W _C	R4	R3
X	1	X	0	0	HP6	HP5
X	1	X	0	1	HP6	HP7
X	1	X	1	0	HP8	HP5
X	1	X	1	1	HP8	HP7
1	0	0	0	X	HP6	HP5
1	0	0	1	X	HP8	HP7
1	0	1	X	0	HP6	HP5
1	0	1	X	1	HP8	HP7
0	0	X	X	X	HP6	HP5

FIG. 34

x32	E _F	W _F	W _E	R6	R5
1	X	0	0	R2	R1
1	X	0	1	R2	R3
1	X	1	0	R4	R1
1	X	1	1	R4	R3
0	0	0	X	R2	R1
0	0	1	X	R4	R3
0	1	X	0	R2	R1
0	1	X	1	R4	R3

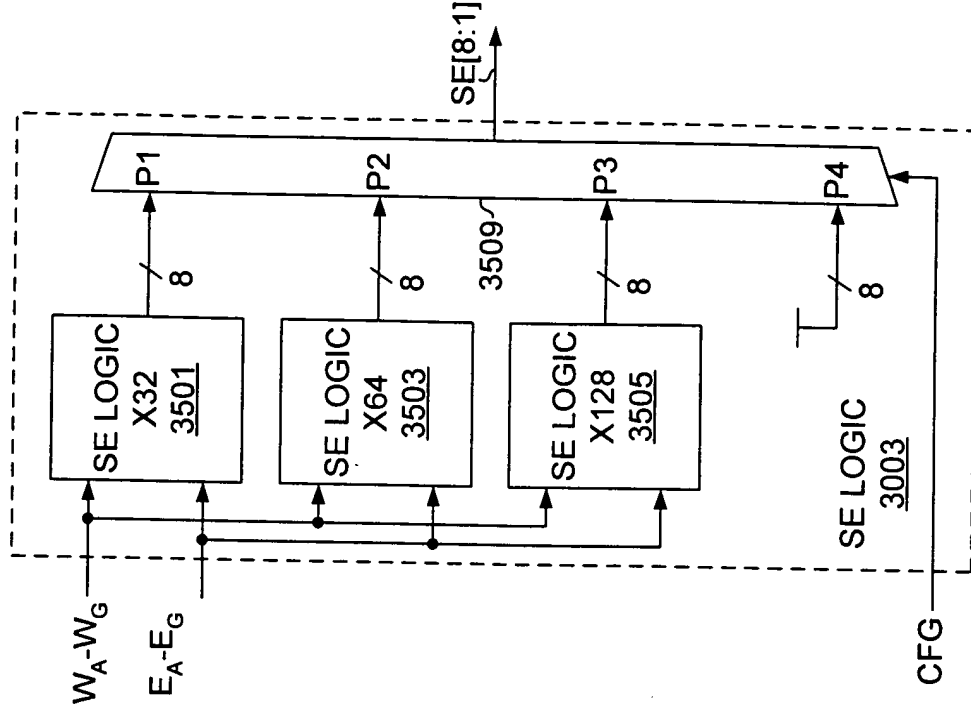


FIG. 35

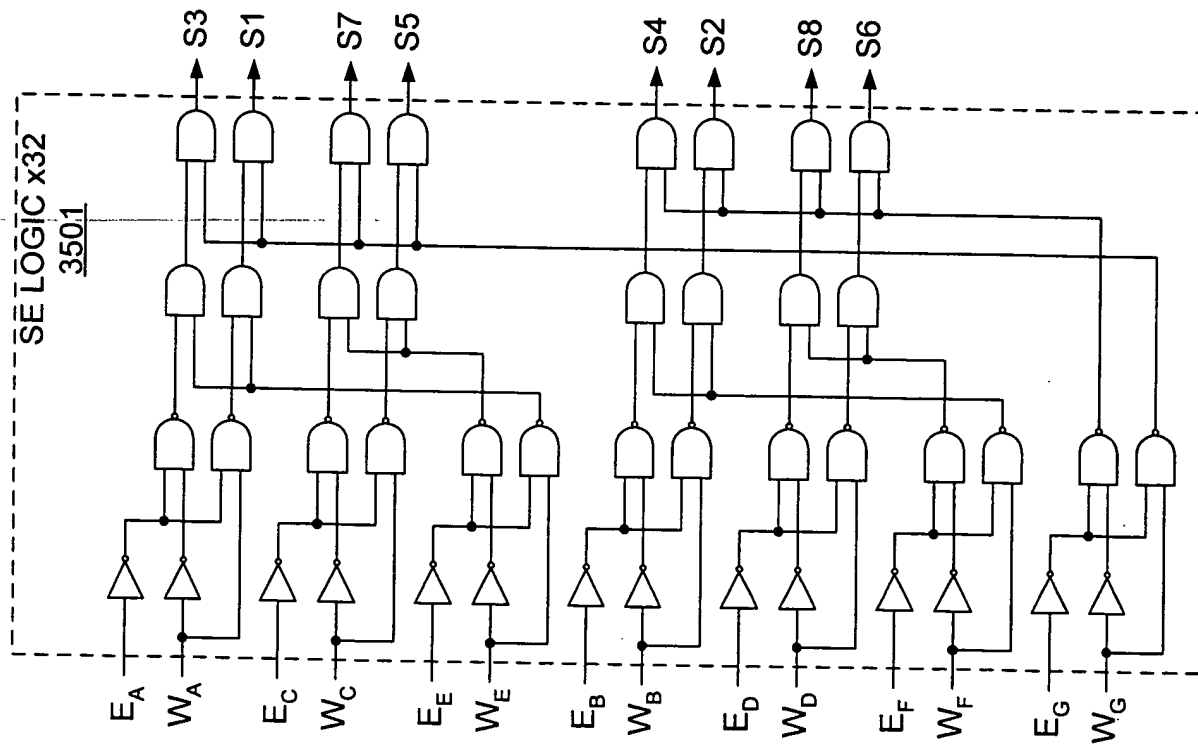


FIG. 36

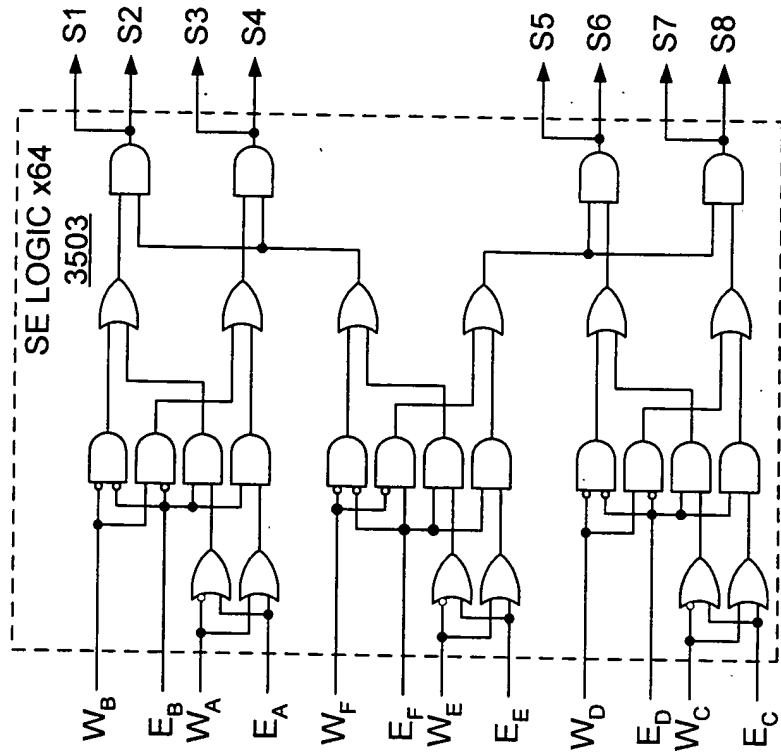


FIG. 37

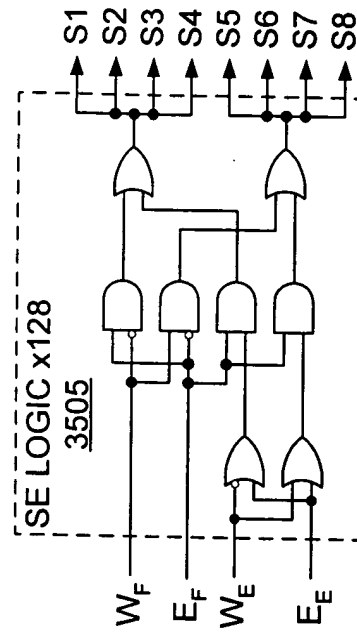


FIG. 38

FIG. 39 is a block diagram of a match logic circuit 1507. The circuit 1507 includes a row match logic block 3901, an array match logic block 3903, and a match one logic block 4001. The row match logic block 3901 receives a row match signal 1512₁ and a row match signal 1512₂. The array match logic block 3903 receives a row match signal 1512₁ and a row match signal 1512₂. The match one logic block 4001 receives a row match signal 1512₁ and a row match signal 1512₂. The circuit 1507 also includes a match logic block 4003, which receives a row match signal 1512₁ and a row match signal 1512₂. The match logic block 4003 is connected to the match one logic block 4001 and the array match logic block 3903. The match logic block 4003 also receives a row match signal 1512₁ and a row match signal 1512₂. The match logic block 4003 is connected to the match one logic block 4001 and the array match logic block 3903. The match logic block 4003 also receives a row match signal 1512₁ and a row match signal 1512₂. The match logic block 4003 is connected to the match one logic block 4001 and the array match logic block 3903.

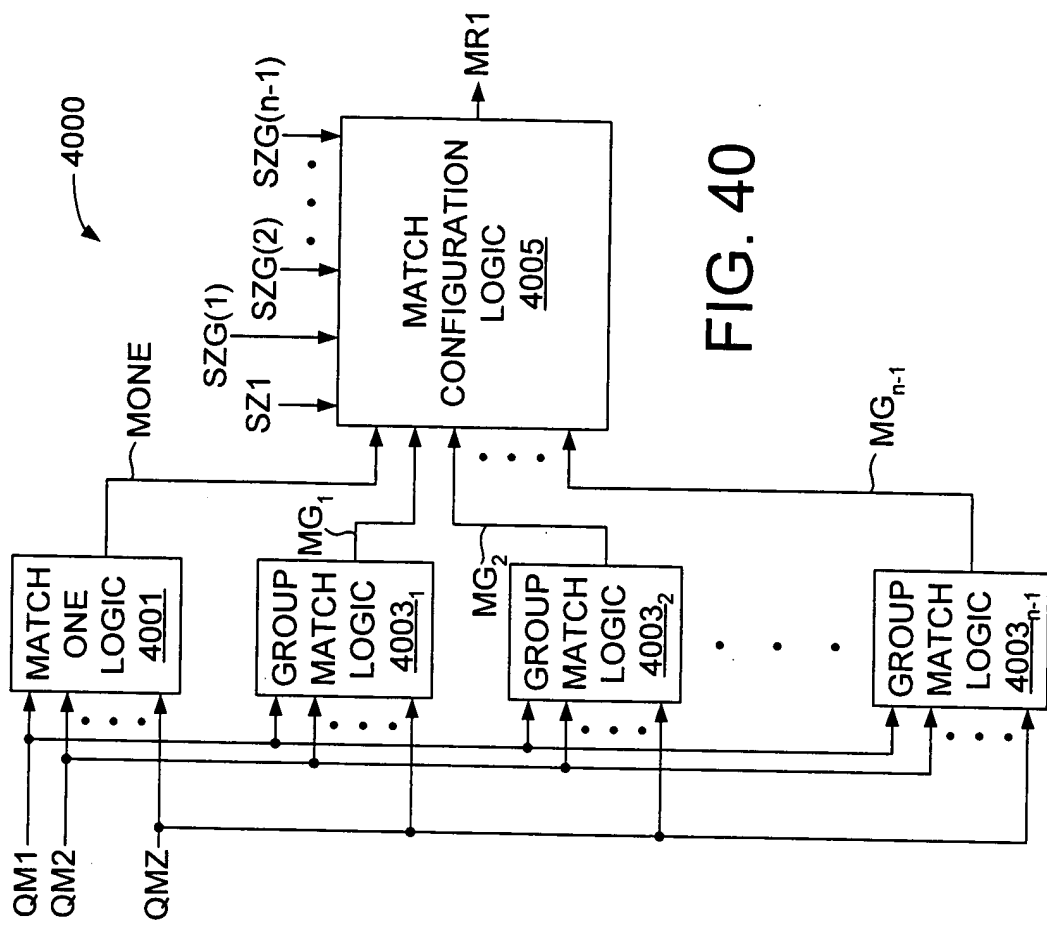


FIG. 39

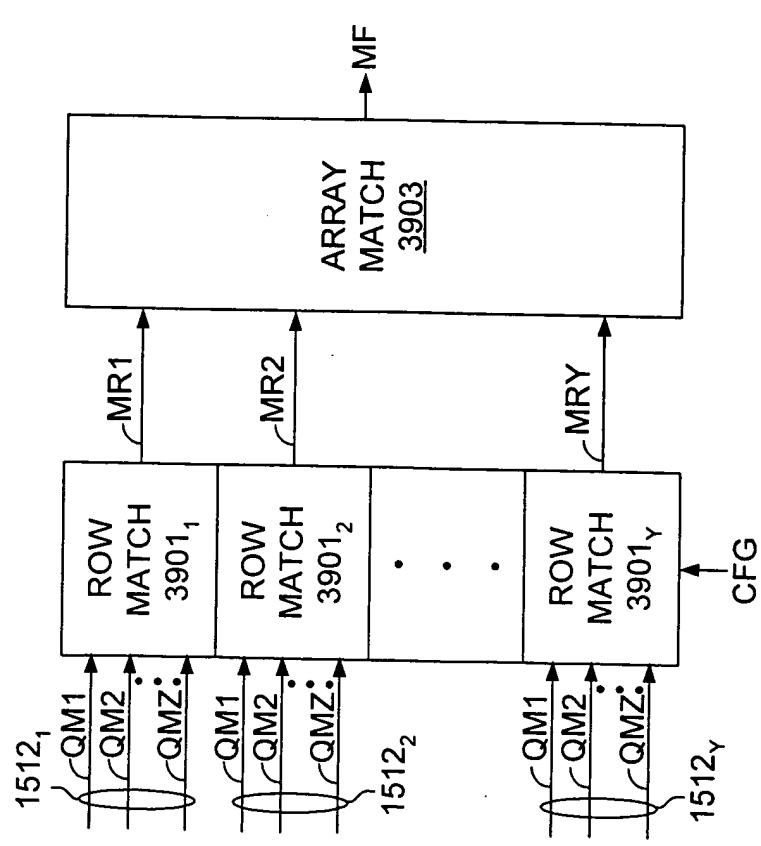


FIG. 40

FIG. 41 is a schematic diagram of a logic circuit 4101. The circuit 4101 is an OR gate with multiple inputs labeled QM1, QM2, and QMZ, and a single output labeled MONE. The circuit 4101 is shown in a perspective view.

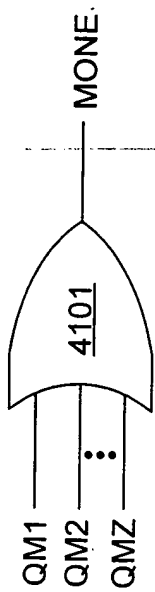


FIG. 41

FIG. 42

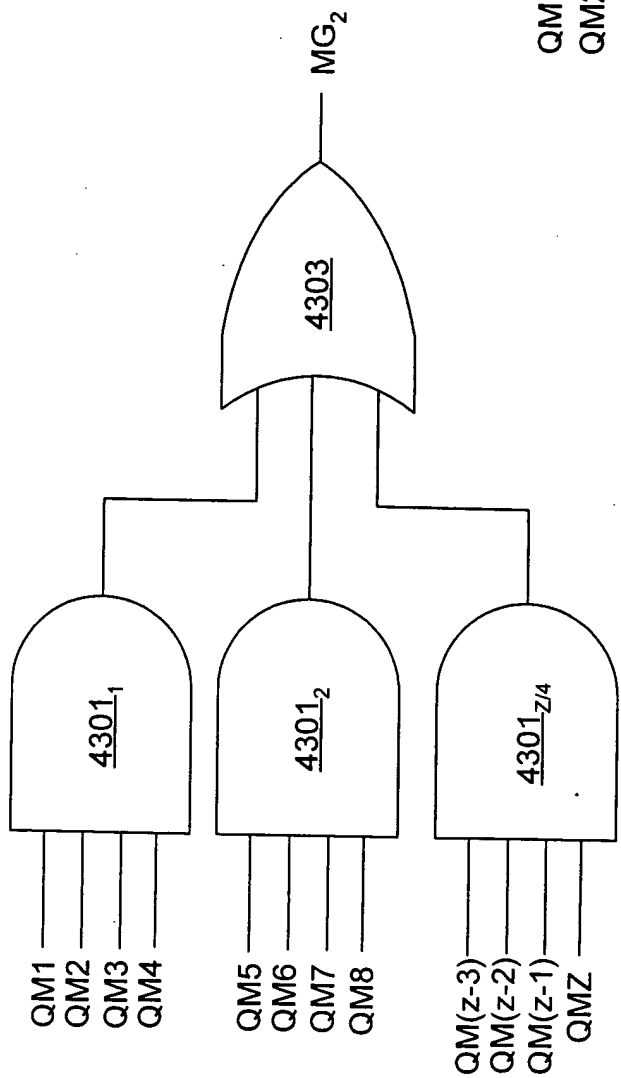
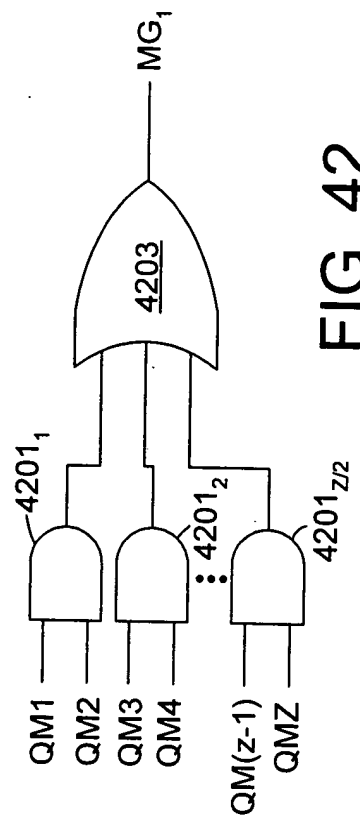


FIG. 43

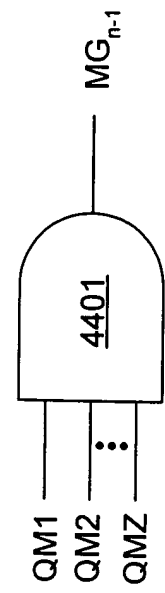


FIG. 44

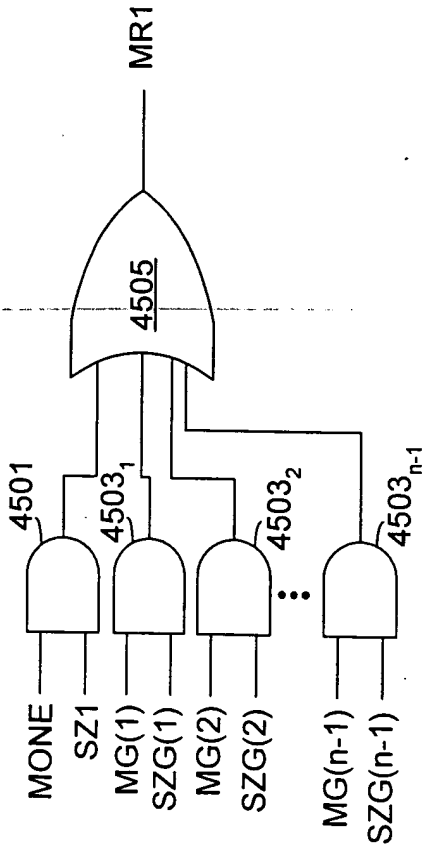


FIG. 45

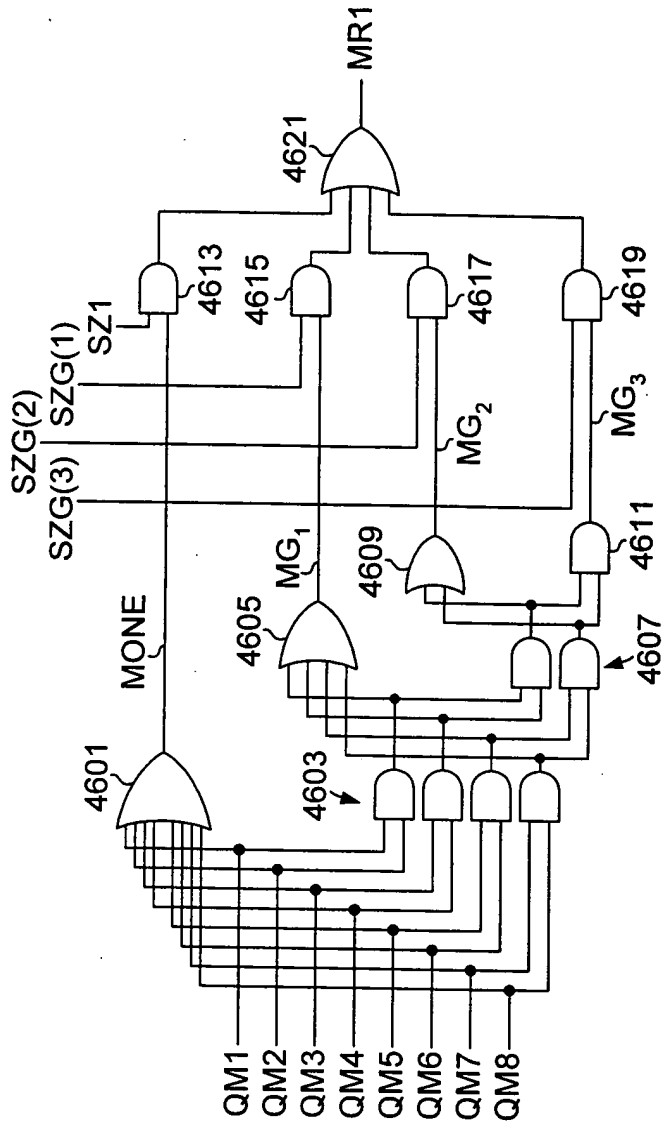


FIG. 46

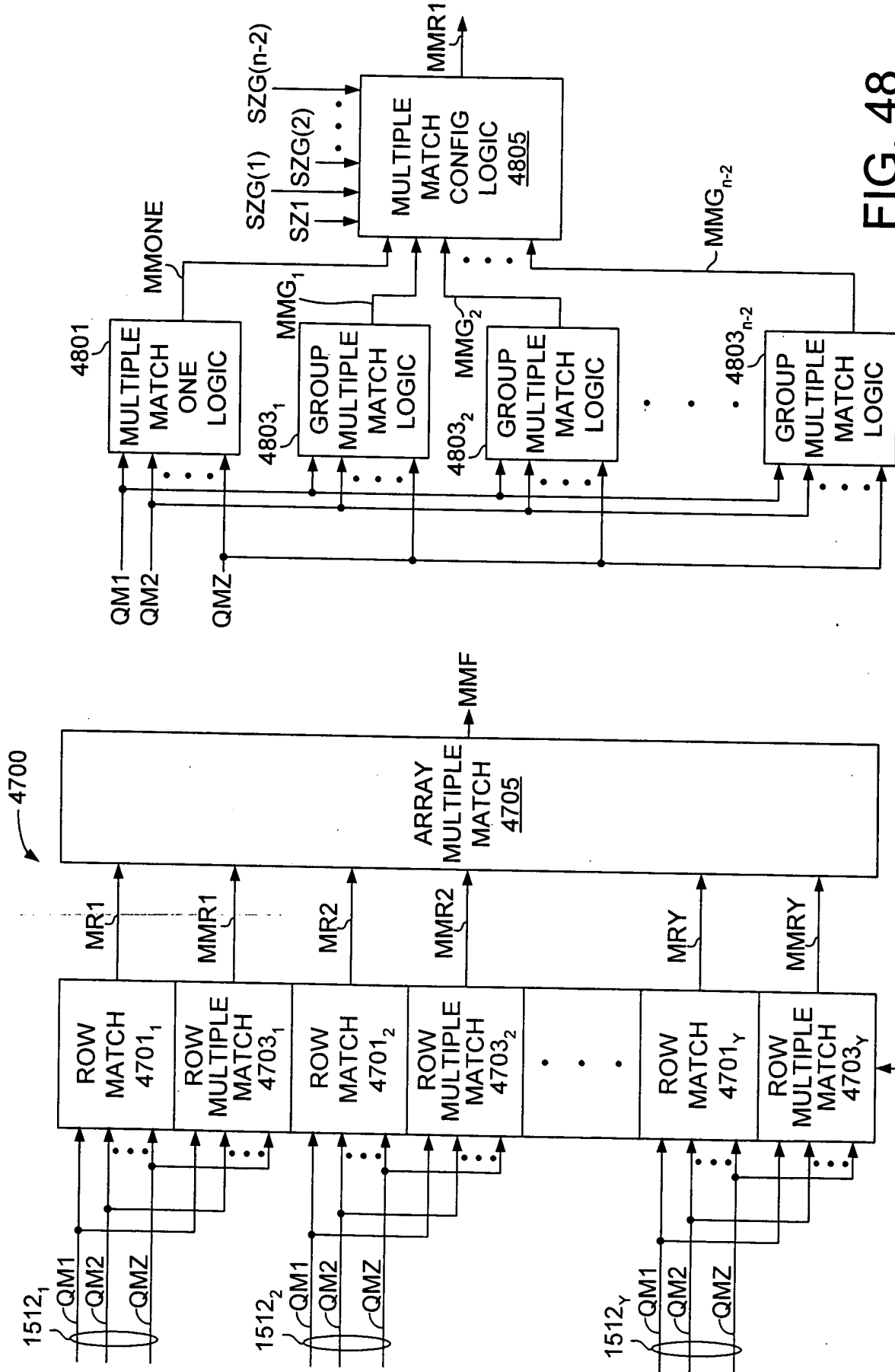


FIG. 47

FIG. 48

FIG. 49 is a schematic diagram of a logic circuit 4903. The circuit includes a series of AND gates 4901₁, 4901₂, ..., 4901_r. The inputs to these gates are labeled QM1, QM2, QM1, QM3, ..., QM(z-1), QMZ. The outputs of the AND gates are connected to a large OR gate 4903, which produces the output MMONES.

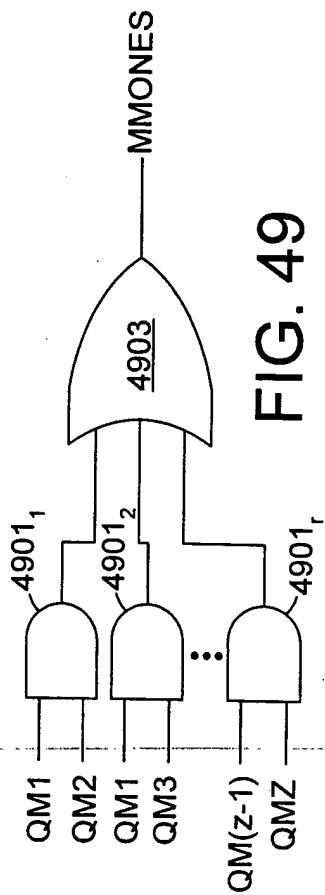


FIG. 49

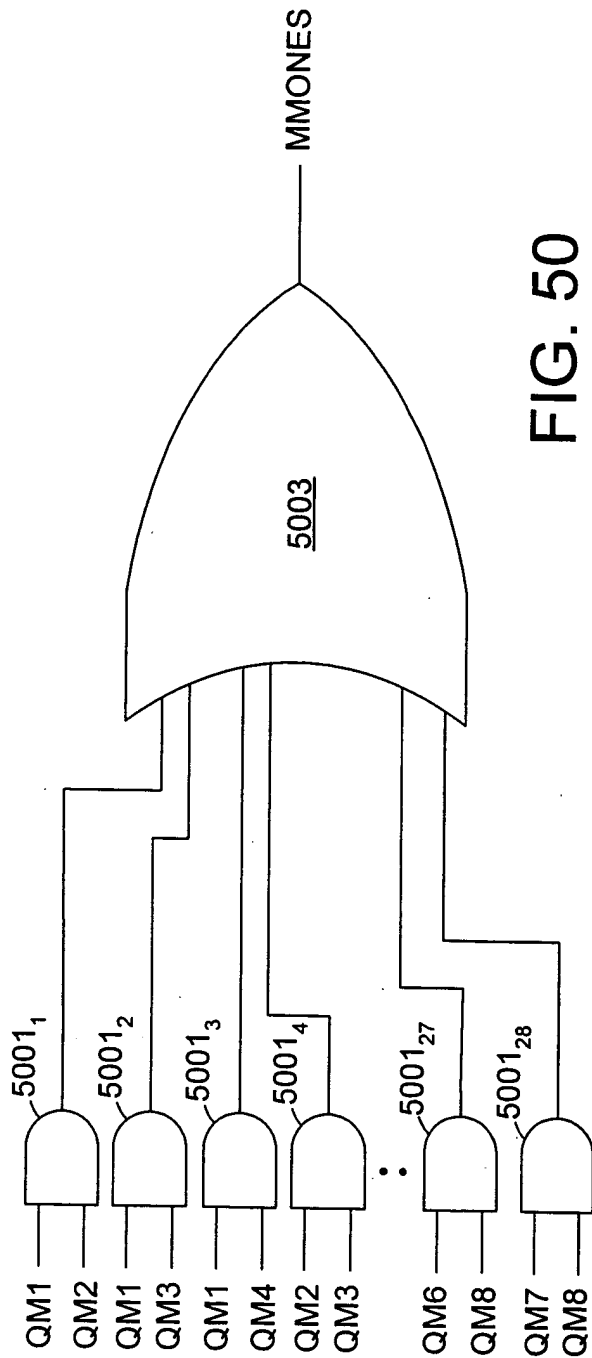


FIG. 50

FIG. 51 is a block diagram of a multiple match circuit 5103. The circuit 5103 has a plurality of inputs QM1, QM2, QM3, QM4, ..., QM(z-1), QMZ. The inputs QM1, QM2, QM3, QM4 are connected to a first AND gate 5101₁. The inputs QM(z-1), QMZ are connected to a last AND gate 5101_{z/2}. The outputs of the AND gates 5101₁, ..., 5101_{z/2} are connected to the inputs of the multiple match circuit 5103. The output of the multiple match circuit 5103 is MMG₁.

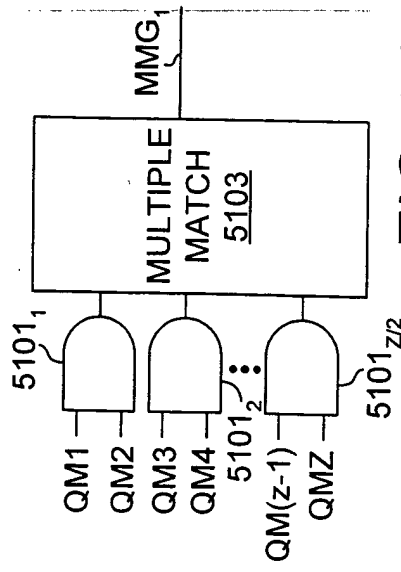


FIG. 51

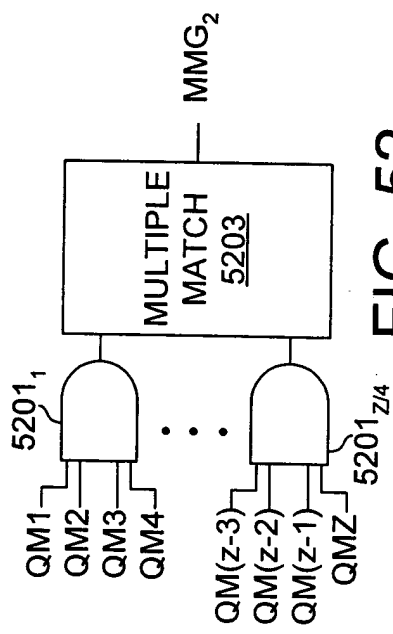


FIG. 52

FIG. 55

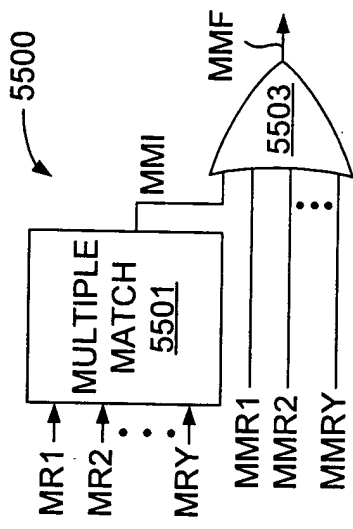


FIG. 53

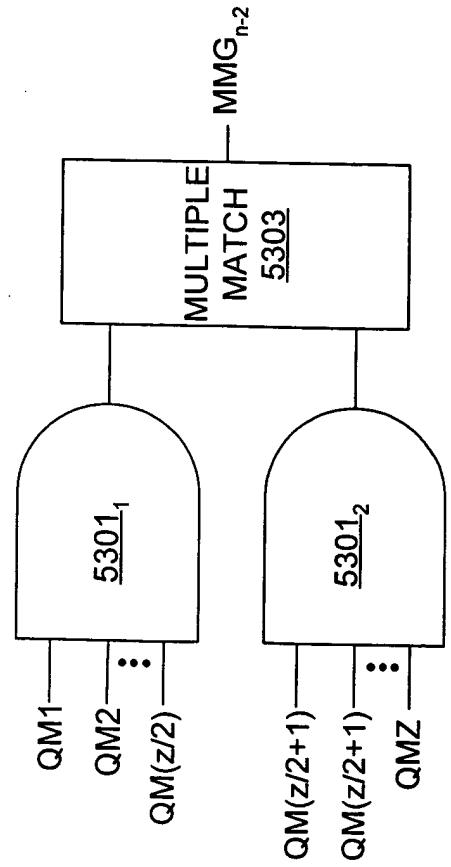


FIG. 54

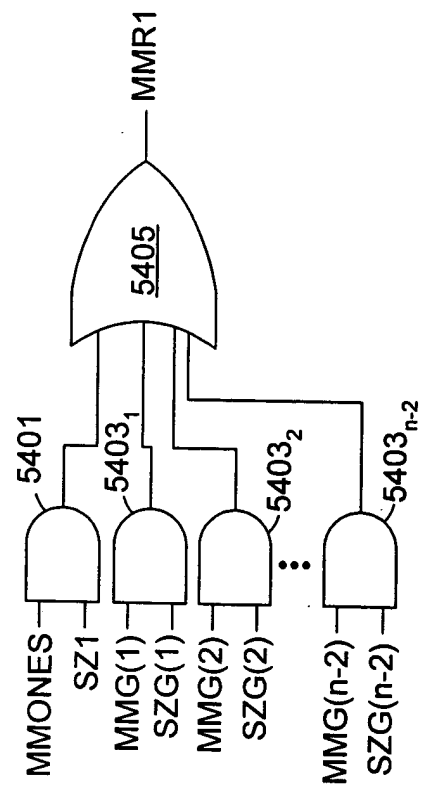
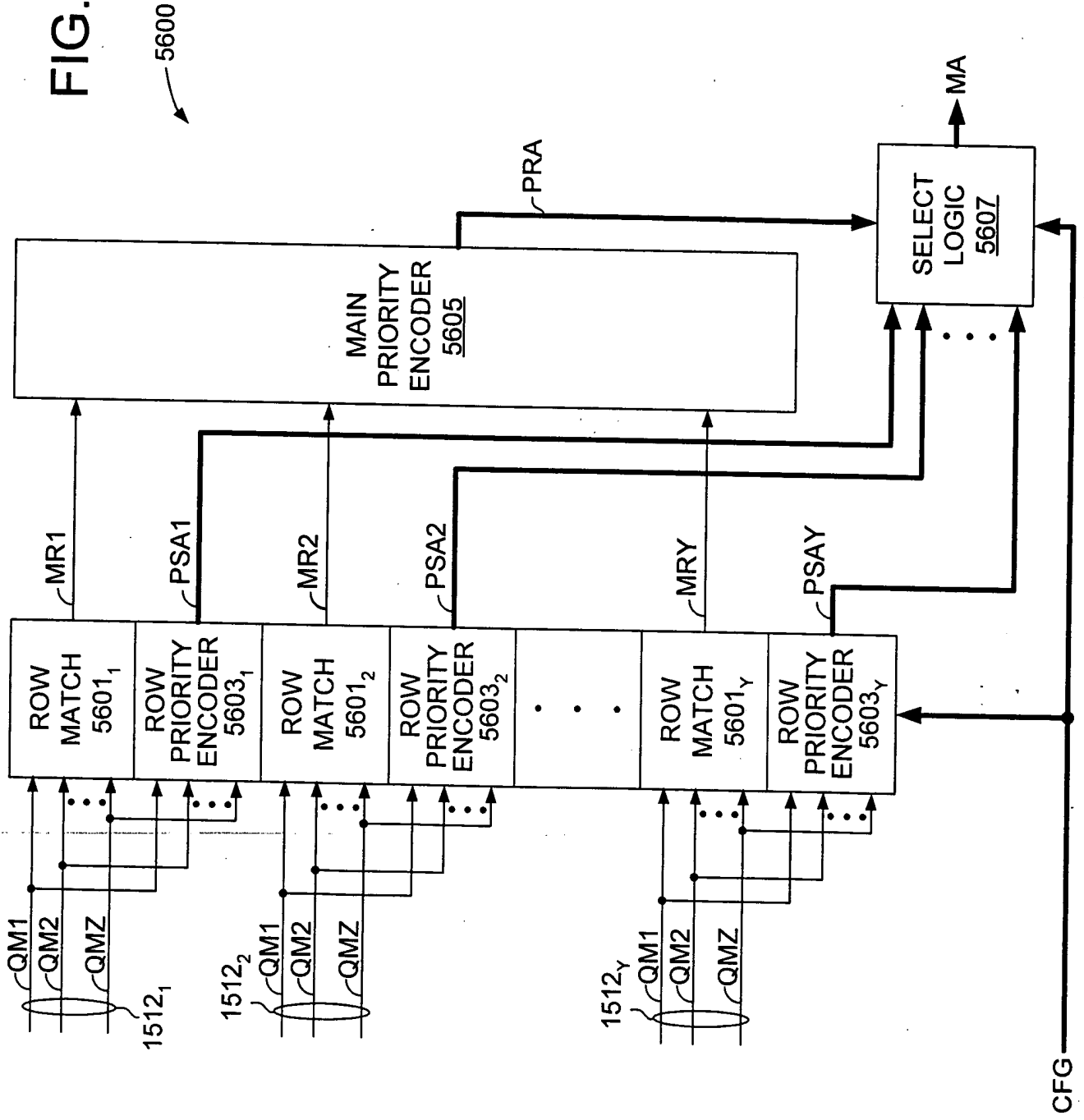


FIG. 56



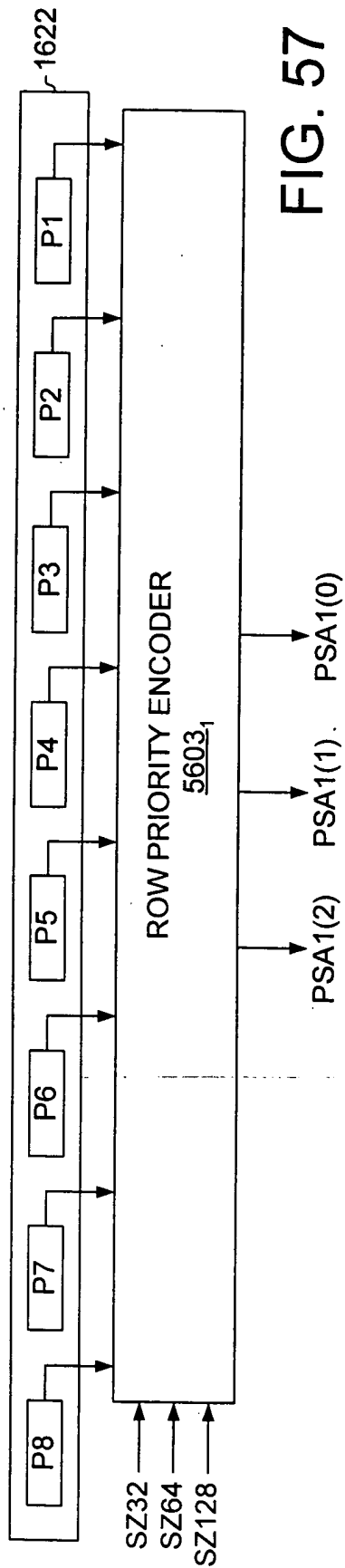


FIG. 57

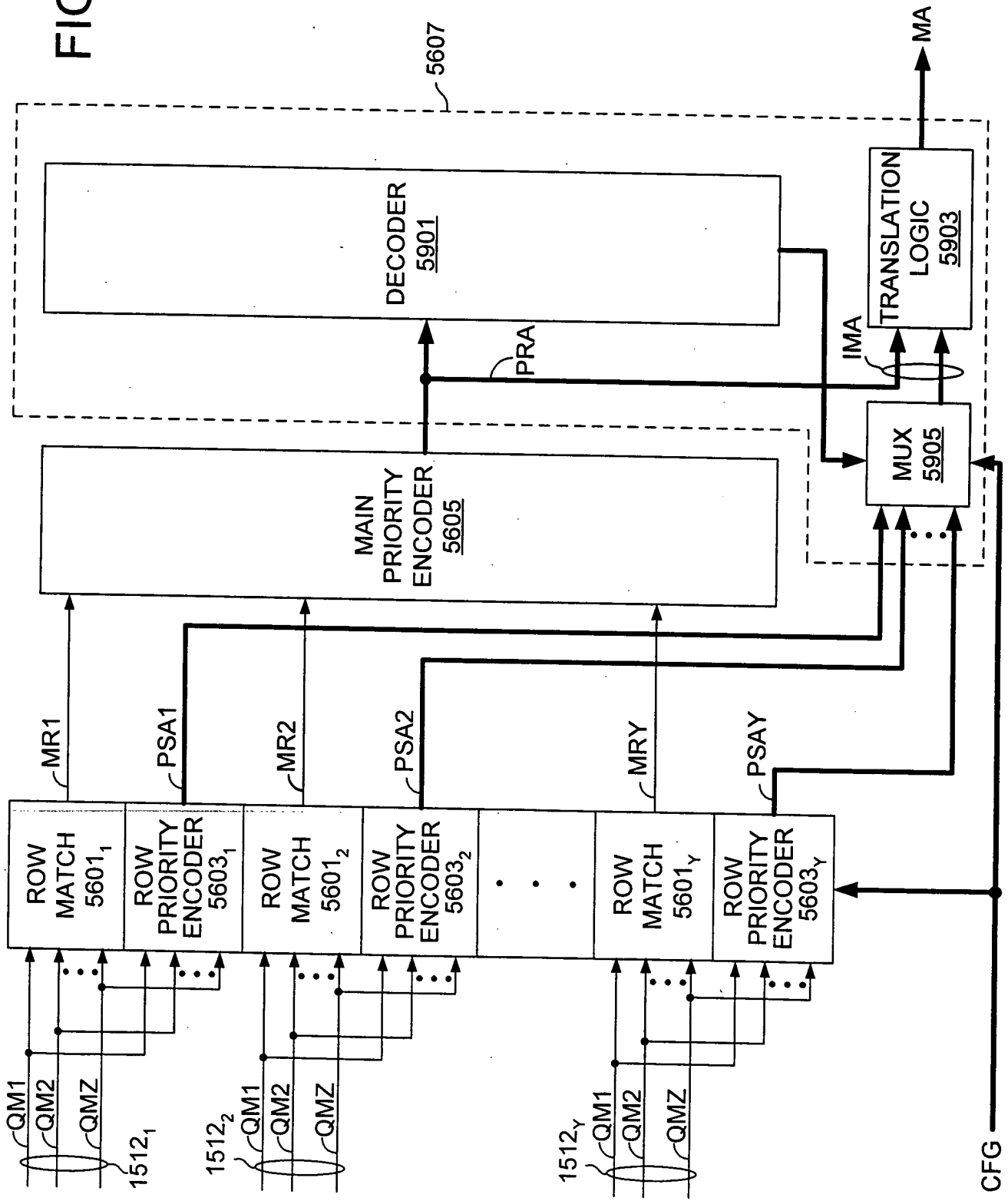
CFG											
SZ32											
QM1	QM2	QM3	QM4	QM5	QM6	QM7	QM8	ADDR	PSA1(2)	PSA1(1)	PSA1(0)
1	X	X	X	X	X	X	X	0	0	0	0
0	1	X	X	X	X	X	X	1	0	0	1
0	0	1	X	X	X	X	X	2	0	1	0
0	0	0	1	X	X	X	X	3	0	1	1
0	0	0	0	1	X	X	X	4	1	0	0
0	0	0	0	0	1	X	X	5	1	0	1
0	0	0	0	0	0	1	X	6	1	1	0
0	0	0	0	0	0	0	1	7	1	1	1
0	0	0	0	0	0	0	0	X	X	X	X

SZ64											
QM1	QM2	QM3	QM4	QM5	QM6	QM7	QM8	ADDR	PSA1(2)	PSA1(1)	PSA1(0)
1		X		X		X		0	0	0	X
0		1		X		X		1	0	1	X
0		0		1		X		2	1	0	X
0		0		0		1		3	1	1	X
0		0		0		0		X	X	X	X

SZ128											
QM1	QM2	QM3	QM4	QM5	QM6	QM7	QM8	ADDR	PSA1(2)	PSA1(1)	PSA1(0)
1					X			0	0	X	X
0					1			1	1	X	X
0					0			X	X	X	X

FIG. 58

FIG. 59



6000



A diagram of a single neuron. It shows an input x entering a circle representing the neuron. Inside the circle, the input is multiplied by a weight w and a bias b is added. The output of the neuron is labeled y .



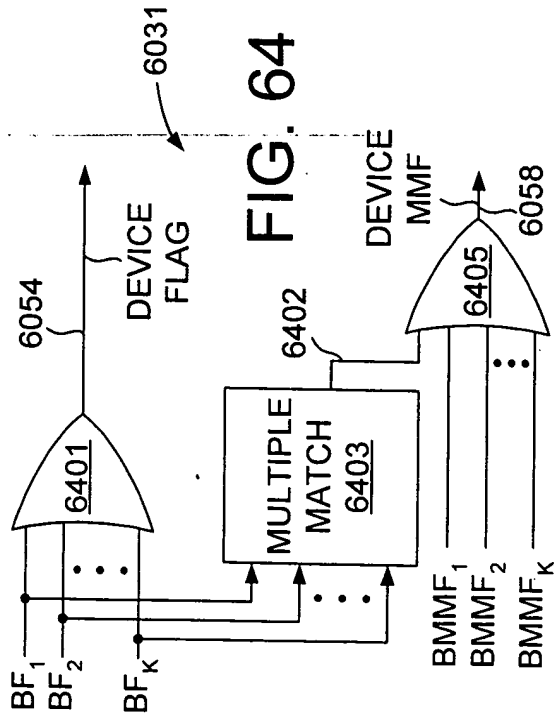


FIG. 64

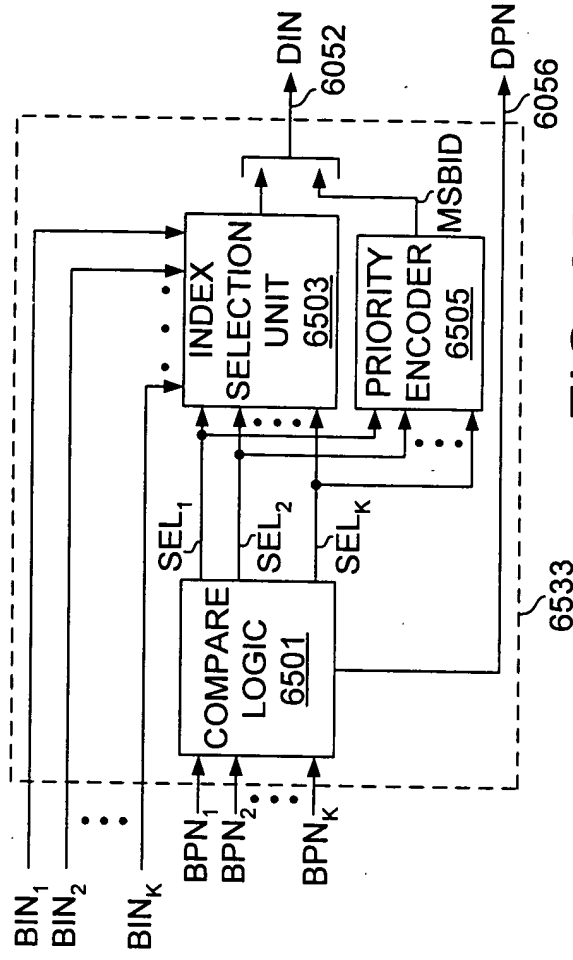


FIG. 65

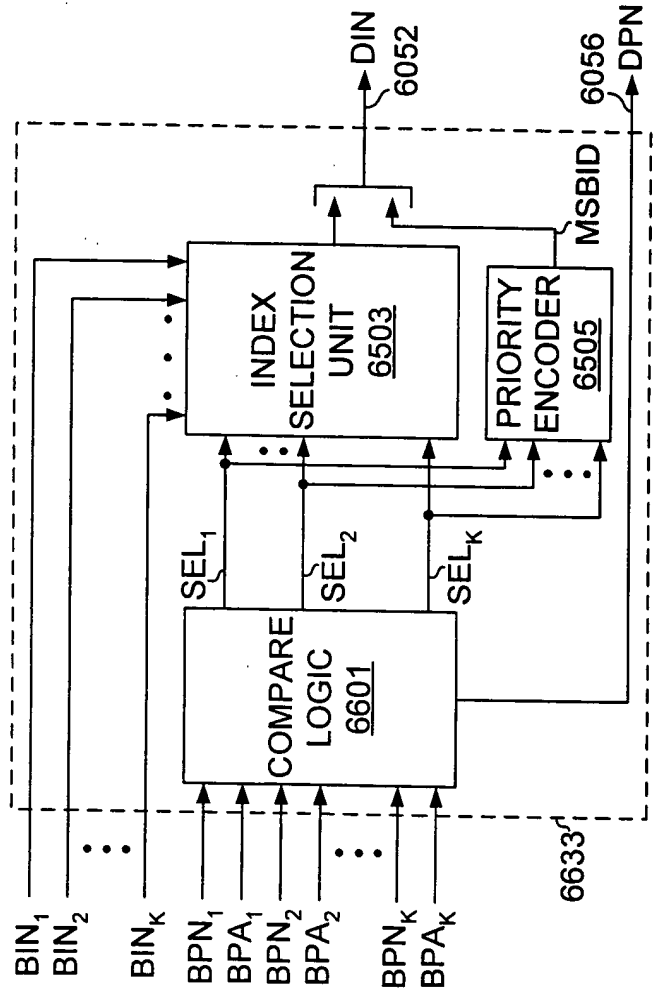


FIG. 66

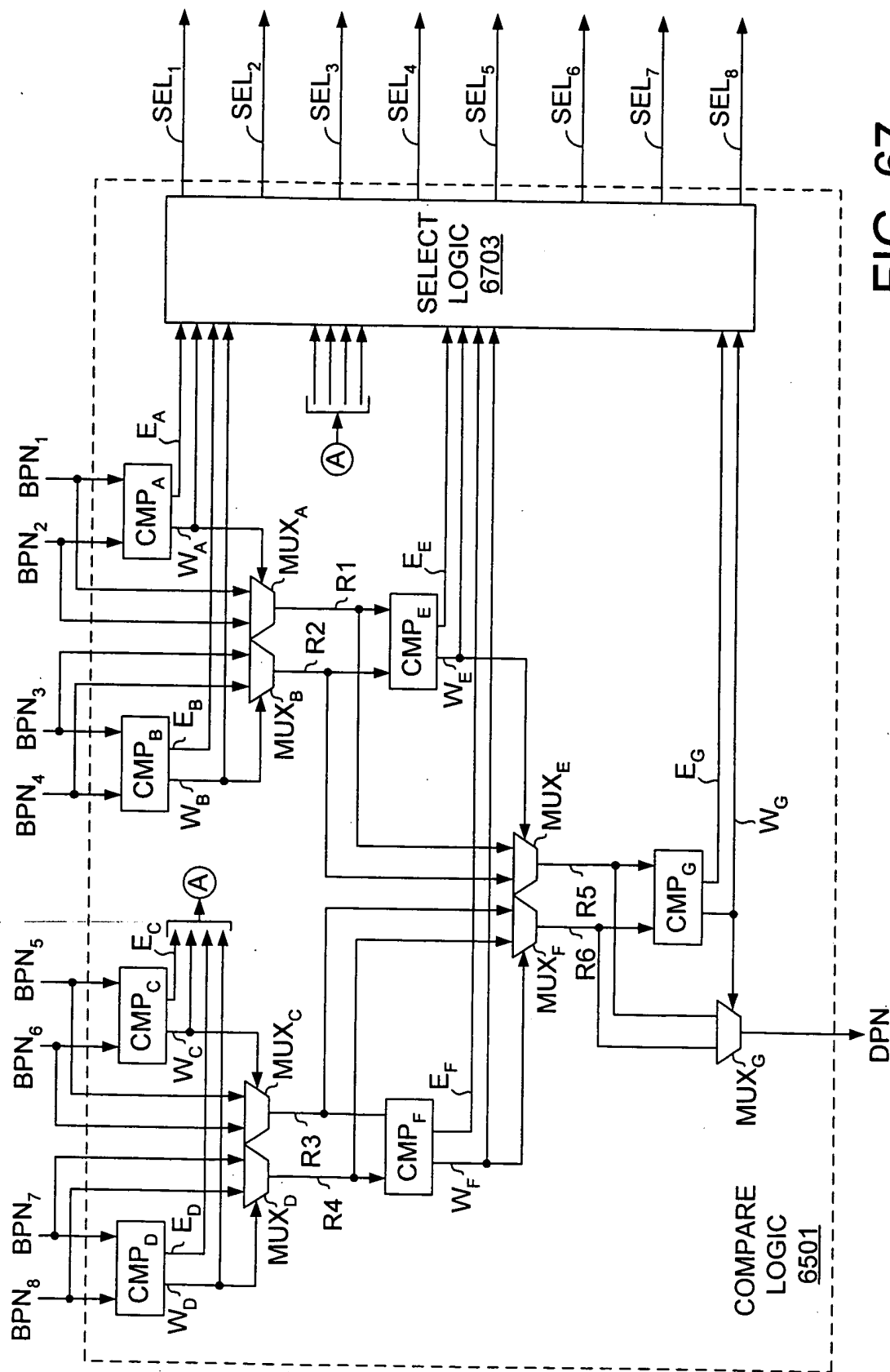


FIG. 67

FIG. 68

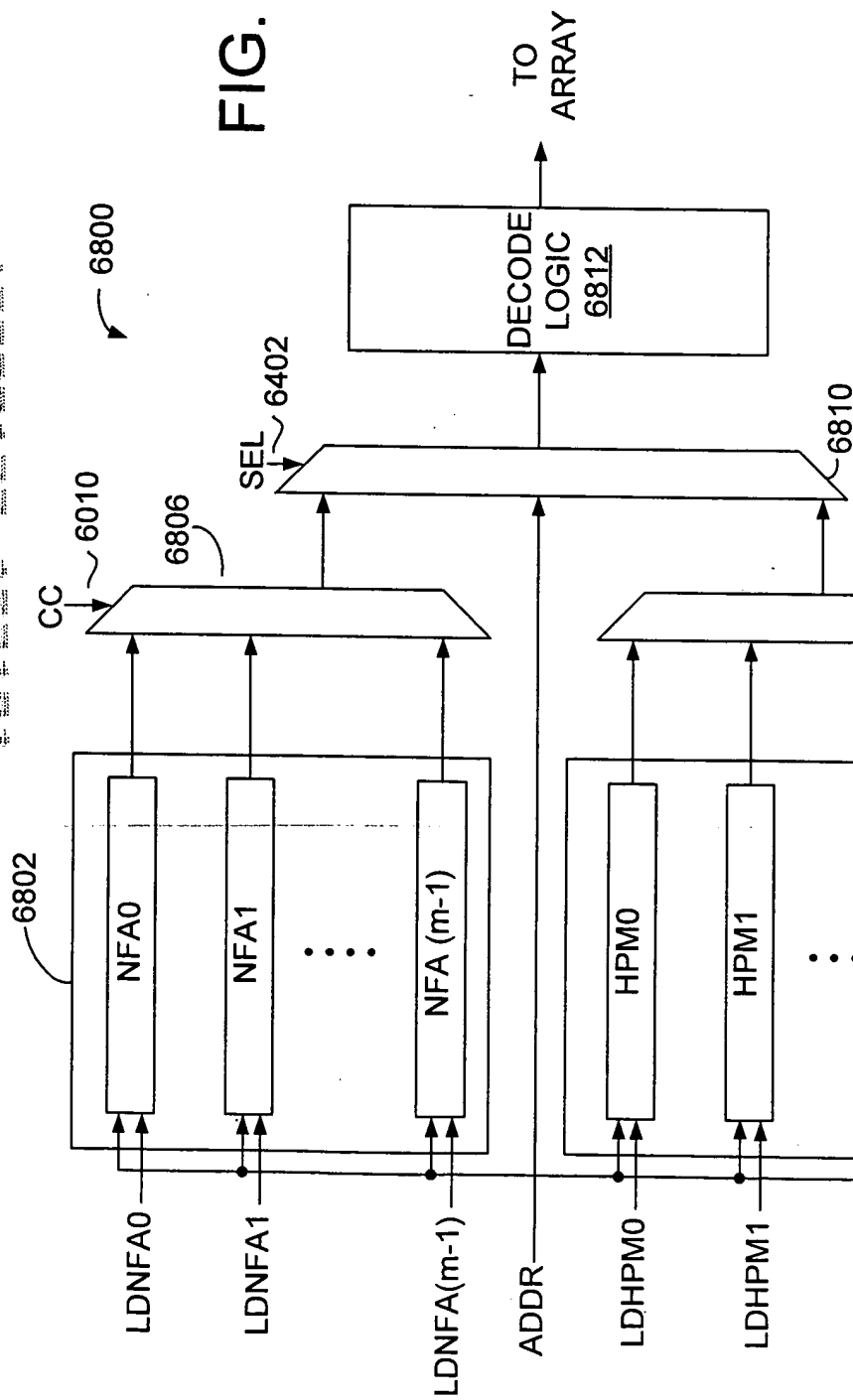
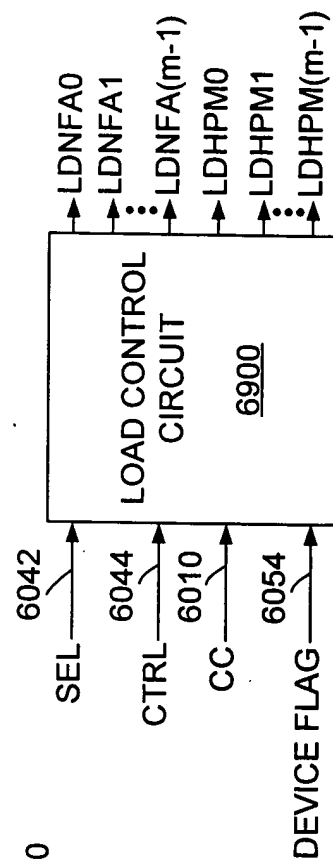


FIG. 69



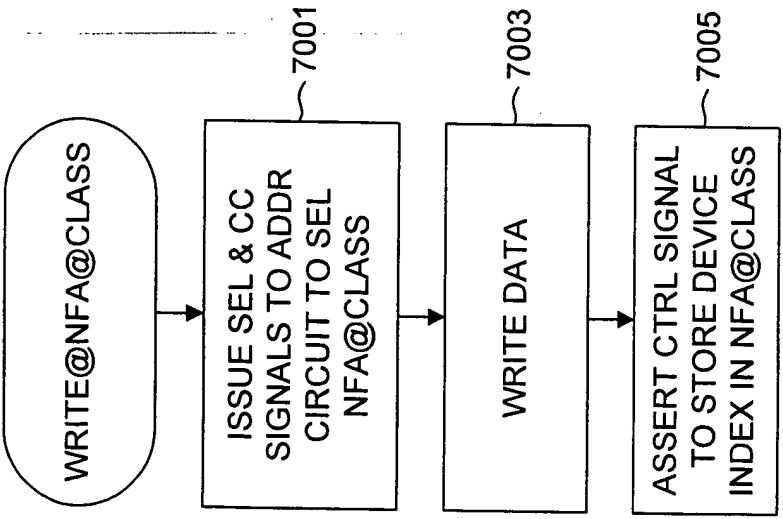


FIG. 70

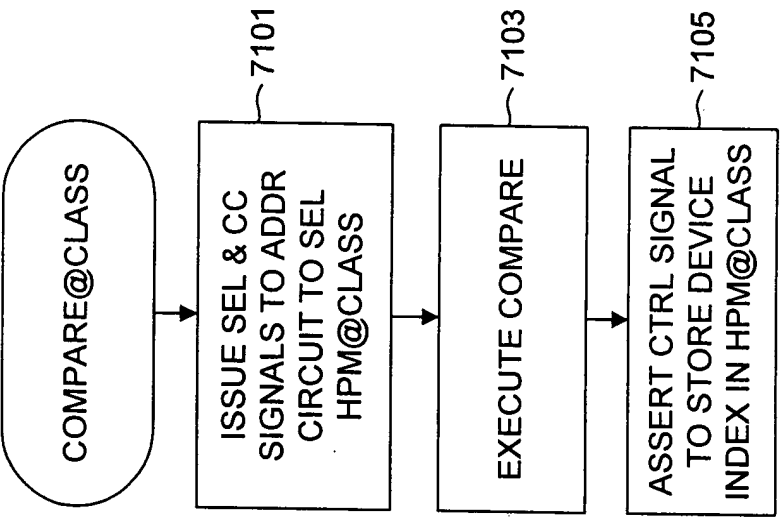


FIG. 71

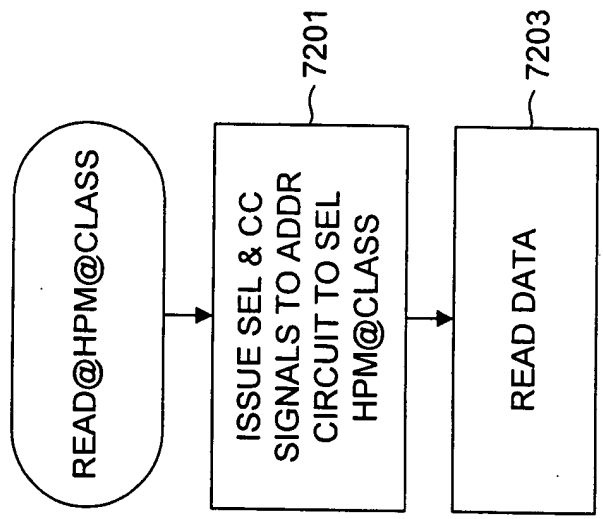


FIG. 72

FIG. 73 is a schematic diagram of a memory array structure. The array is organized into rows and columns. A word line, labeled 7605, runs horizontally across the array. A column line, labeled 6010, runs vertically. The array is divided into three main sections, each containing a set of memory cells. The first section is labeled 7301₁ and contains a set of memory cells 7301₁. The second section is labeled 7301₂ and contains a set of memory cells 7301₂. The third section is labeled 7301_k and contains a set of memory cells 7301_k. Each section is connected to a common column line 6010 and a word line 7605. The array is also connected to a control line 6016, which is labeled 6016₁, 6016₂, and 6016_k for the respective sections. The array is further connected to a control line 6010, which is labeled 6010₁, 6010₂, and 6010_k for the respective sections. The array is also connected to a control line 6010, which is labeled 6010₁, 6010₂, and 6010_k for the respective sections.

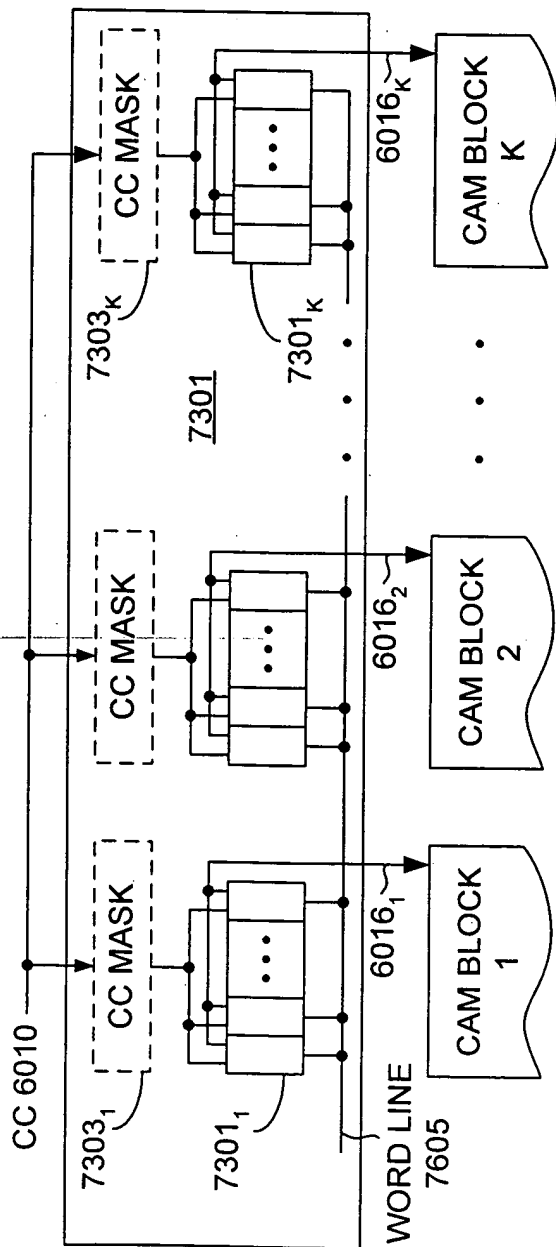


FIG. 73

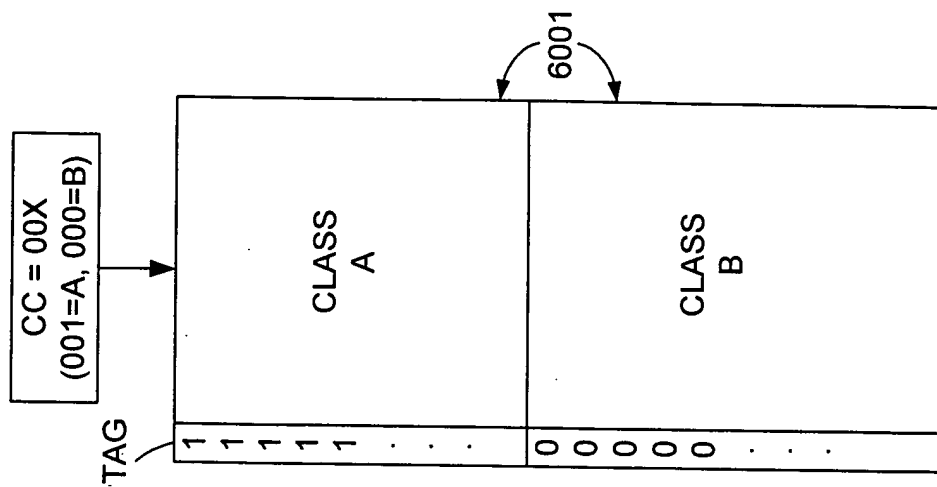


FIG. 74

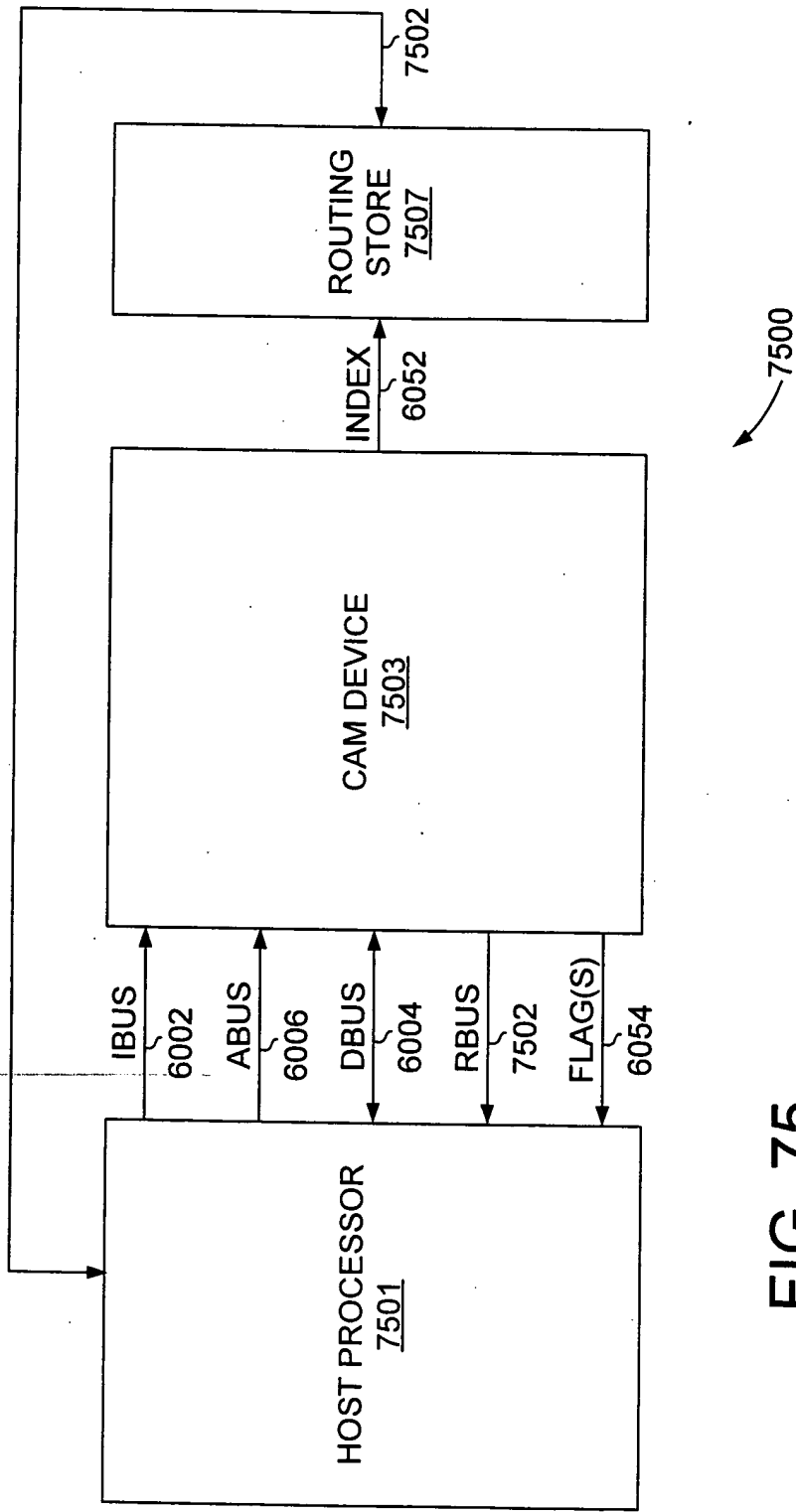


FIG. 75